

SD Times

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SPECIAL REPORT
Keeping Data in Sync
Is Getting Easier
Organization, scoping and security
the keys to effective synchronization

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Photo courtesy of Carnegie Mellon University



The 'Boss' was able to win the challenge, working in harmony due to the efforts of the Carnegie Mellon team.

Yes, It Can Drive 55

DARPA prize-winning robotic Chevrolet negotiates obstacle course without incident

BY ALEX HANDY

Process is everything. For software developers, it's the code that matters, but for the manager, the process can mean the difference between a weekend fixing broken builds and one spent with the kids.

But for some projects, standard enterprise development processes need to be tweaked and adapted to special circumstances. Bryan Salesky found this out when he was tapped to join Carnegie Mellon University's Tartan Racing team in mid-2006.

Salesky led the software team responsible for linking together the cameras and sensors aboard Tartan's robotic 2007 Chevrolet Tahoe—nicknamed "Boss"—and making them think. On Nov. 4, the Boss won the DARPA Urban Challenge, a government-sponsored robotic car competition, by finishing the 55-mile course without incident despite numerous traffic obstacles and a brief delay due to GPS signal interference. DARPA—the Defense Advanced Research Projects Agency—is the central research and development organization of the U.S. Department of Defense.

After years of working with fault-tolerance and railroad systems, Salesky currently works for the National Robotics Engineering Center (NREC), an autonomous business unit of Carnegie Mellon University in Pittsburgh.

The NREC loaned Salesky out to Tartan Racing last spring as the project was being outlined. His team size fluctuated as time

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Secure Code Exams?

New programming council proposes essential skills testing, metrics for developers; Java first

BY DAVID WORTHINGTON

In the United States, Black Friday—the day after the Thanksgiving holiday in late November—is the unofficial start of the holiday shopping season, and millions of consumers are forsaking long lines at cash registers and are entrusting sensitive personal information to merchants over the Web. Lurking in the shadows are criminal hackers, who have learned how to profit from the vulnerabilities in Web applications.

The consequences of data breaches are obvious. Indeed, security initiatives are under way to ensure that programmers have

the essential skills to program secure applications. The Secure Programming Council, a group of organizations both corporate and governmental working under the banner of the SANS Institute, wants to make that effort universal and is working to establish standard metrics for secure programming.

Last month, the council announced its first consensus document for what will become the GIAC (Global Information Assurance Certification) Secure Software Programmer Certification Exam for Java. The document, "Essential Skills for Secure Programming Using Java/Java

EE," contains criteria for developers to demonstrate that they have mastered the "minimum due standard of care" for secure programming in the context of security-related tasks.

Among those tasks are access control, application faults and logging, authentication and session management, data handling, encryption services, Java types and JVM management, and secure architecture and coding principles.

The developer must be able to demonstrate an understanding of access control in different tiers of applications; properly handle both expected and unexpected

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Large Screen or Small, It's 'One Web' for All

W3C's Berners-Lee sees no limitations

BY JENNIFER DEJONG

The limitations of the small screen will appear less pronounced, as co-existence with big screens becomes commonplace. The Web's widespread availability on mobile devices, in addition to desktop and laptop computers, will change the way people talk about the Web itself: Emphasis will shift from Web sites to the services or content they offer.

Those were two observations

made by World Wide Web inventor Tim Berners-Lee at the Mobile Internet World conference in Boston last month.

"I took a flight on a mobile device. And when I walk into my office, there it is on a big screen," he said. "I am not thinking about [the Web site] www.travelocity.com; I am thinking about my flight reservation," he said. "That's a new level of abstraction."

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The Web is designed to include anything and anyone, says its inventor, Tim Berners-Lee.

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HP Loadrunner Leads Pack At Testers Choice Awards

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Building Security Into Source Code

Analysis tool makers say scans should be part of nightly integration

BY JENNIFER DEJONG

How do you convince an overworked developer to add another task to a long to-do list?

Source code analysis tool makers have sought to answer that question since they began selling software for finding security flaws a few years ago.

Recently, they have begun offering a new answer: Run the scan at build time instead of insisting developers do the job at their desktops.

"The build server is a powerful place to be," said Fortify chief scientist and co-founder Brian Chess. "You don't want [developers] to tie up their personal workstations."

Incorporating source code analysis as part of nightly builds helps eliminate issues that will surface later, added Ounce Labs senior vice president of product management Claudia Dent. And it makes the task "more palatable to the development team."

Neither company—nor their competitors—suggested that running the scanners at build time is the sole solution for finding security flaws. All of them said security should be addressed at every stage of the development process. But the build time approach has gained attention as source code analysis tool makers contend with the fact that their offerings have not been well received by developers. The key objection, as

SCANNING SOURCE CODE FOR SECURITY FLAWS

BEST TIME TO RUN THE TOOL

As the code is written.

PROS

Programmers possess the best knowledge about how their code works.

They gain tool expertise over time.

Tools plug in to development environments, making analysis available on demand.

CONS

Analyzing source code is time-consuming, and programmers are already under pressure to deliver projects on deadline.

To overcome that limitation, source-code analysis tools must be fast and easy to use. For large projects, programmers should scan only their part of the code. Complete analysis should take place at build time or at major milestones.

Even with training, programmers aren't security experts.

At build time.

In most organizations, software projects have a well-defined build process, making it a logical time to run the scan.

Build results can produce reliable reports to use for direct remediation and also allow an organization to create recurring, consistent measure of a project.

Programmers may pay little attention to scan results, unless the remediation process is managed properly. That responsibility often lies with the security team, which figures out which findings take priority and assigns programmers to fix them. But security team members may lack software development savvy, so the two groups don't necessarily work well together.

At major milestones.

Organizations with well-defined development processes are accustomed to checkpoints at major milestones, such as a design review. Running the tool at these points aligns well with the way they work.

Developers don't consider security issues until a major milestone—typically toward the end of a project—arrives. At that point, other obligations may further push security concerns to the sidelines.

Source: Based on information from "Secure Programming With Static Analysis," by Brian Chess and Jacob West (Addison-Wesley 2007).

reported earlier by SD Times, is that scans take too long and turn up too many false positives.

Another barrier to adoption is that the art of secure coding is so new that most professional developers working today have not been trained in the practice, said IBM Watchfire director of security research Danny Alan.

IBM acquired Watchfire earlier this year. The company developed a penetration testing tool, which assesses application security by simulating attacks a hacker might launch.

Chess raised the issue of running source code analysis at

build time in "Secure Programming With Static Analysis," a recently published book he co-authored with Jacob West. And Dent is tackling the topic in a forthcoming white paper.

IBM has also advanced the idea. In an October meeting with SD Times, IBM Rational program manager Ashok Reddy said source code analysis can be "cumbersome for developers." So IBM is readying its Build Forge offering, for automating the build process, to work with the company's source code analysis partners, including Fortify, Klocworks

and Ounce Labs.

When the scanners run as part of the build, developers are less likely to resist their use, said IBM Rational vice president of marketing Scott Hebner. "They don't want to break the build."

Forrester analyst Carey Schwaber agreed that doing static analysis at build time is a reasonable approach, but said, "I doubt a developer would consider a security flaw a broken build."

Coverity open source strategist David Maxwell said conducting scans at build time can

help keep developers from getting overwhelmed by false positive results that the scans are known to produce. Managers can vet the results before assigning fixes to individual developers. "A [potential vulnerability] might be low priority in one app, but not in another," Maxwell said.

Coverity, which sells a source code analysis tool, also co-runs with Stanford University the Scan Project, which analyzes code in open source projects, reporting potential security flaws to developers who run those projects. Last month the Scan Project, funded by the U.S. Department of Homeland Security, added support for code written in Java in addition to that written in C/C++.

Fortify's Chess emphasized that conducting the scan at build time is just one of three alternatives. Some development organizations prefer to run the tool on the programmer's desktop. Others choose to conduct scans only at major milestones, such as a design review, or when penetration tests are completed.

Chess also said that for large projects, asking developers to scan the entire codebase on their desktops is impractical because it takes too long.

A better approach is to break down the project into smaller parts, requiring each developer to scan only the code he has written. ■

After Year, CodeGear Steers Its Own Course

BY ALEX HANDY

It's been just over a year since Borland Software split into two companies. On its own, the developer tools company—CodeGear—has built new tools for new languages and moved its flagship Java IDE into Eclipse. With its own teams for sales, research and management, CodeGear's ship may still be owned by Borland, but the navigation is distinctly independent.

David Intersimone, vice president of developer relations and chief evangelist at CodeGear, said that having a dedicated management team makes all the difference in the world. "From the standpoint of being a startup, and at the



'The next logical step is for the architecture to continue to capture the structure and evolution and logic behind the developing of the application.'

—David Intersimone, VP of developer relations and chief evangelist at CodeGear

same time being a company in developer tools for a long time, we've continued to move forward and add new capabilities. The thing that's also been great is we've now been running as our own organization

for a year, so having our own management team, our own R&D team and our own sales team has been great."

For Intersimone, CodeGear's mission is one of improving developer produc-

tivity and communication. While Borland focused on these as well, that company had many other priorities to balance, thus muddying the waters for the team that would eventually become CodeGear. Once freed, that team set about righting the wayward ship.

Selling IDEs is certainly a difficult proposition in this post-Eclipse world, but Intersimone noted that there are still problems to be worked out in the development environment. "We've solved the user interface part. We've solved the database connectivity part. We've solved the multi-tier distributed computing part. The

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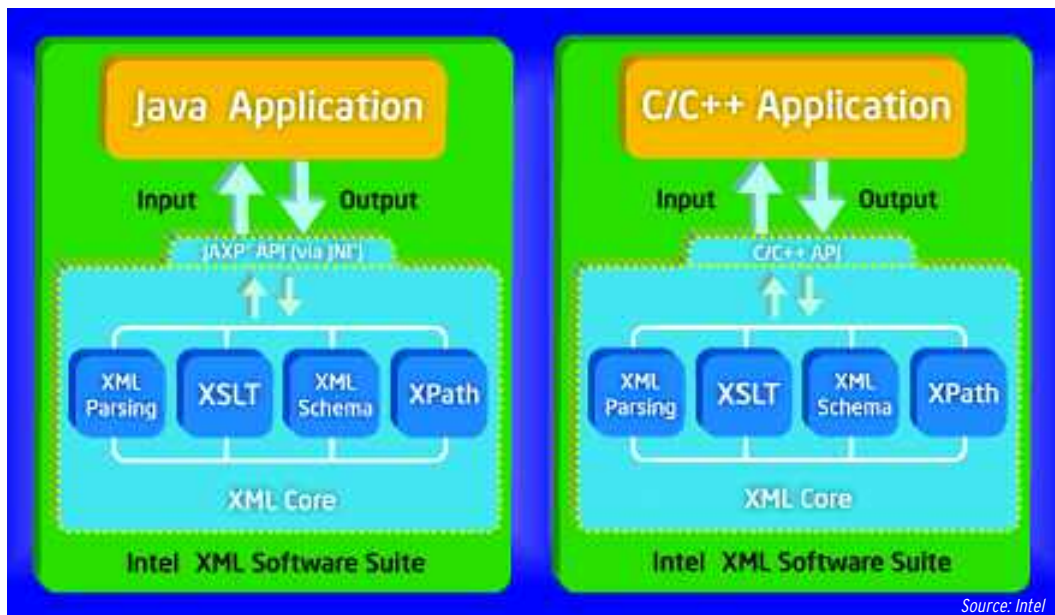


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Source: Intel

The Intel XML Software Suite offers XML libraries that can ease memory management in C++ or Java applications.

Intel Steps on the Gas for SOA

New libraries released to accelerate performance of XML working with Java, C++ applications

BY ALEX HANDY

Intel earlier this month released four new XML libraries aimed at speeding SOA deployments for both Java and C++ developers. The Intel XML Software Suite can be dropped into application bundles in place of existing XML libraries that handle parsing, schema validation, XPath and XSLT.

Stephen Pettit, product manager for XML software libraries at Intel, said that these new libraries were motivated entirely by the company's SOA experience. He said that many SOA implementers

are finding performance bottlenecks in their architectures now that projects are maturing. "What our solutions do is address the real issue: the XML itself needs to be enhanced. We have a library solution that can be used in place of existing libraries to give them better performance," said Pettit.

That solution includes an XSLT accelerator, a schema accelerator for validation, an XML parsing accelerator and an accelerator for XPath. All of these libraries are available for either Java or C++, and

that fact alone offered some challenges for the Intel software team.

"For Java, it's a drop-in replacement for existing libraries that uses JAXP [Java API for XML Processing]. C++ does not have a de facto standard for making XML calls, so we've made calls that are similar to the JAXP structures. It's something developers can use quickly," said Pettit.

The Intel XML Software Suite is available for developers at US\$499. Production-level licenses are also available for \$4,999. ■

Hierarchy Control Comes to AnthillPro

Urbancode updates build tool's UI, integration

BY JEFF FEINMAN

Urbancode, creator of the AnthillPro continuous integration build and dependency management tool, has overhauled the user interface in the latest version.

AnthillPro 3.4, released in late November, features a hierarchical project management scheme enabling users to organize projects, workflows and jobs into folders. AJAX support is also new in this release.

The new user interface introduces a job library and a workflow library, allowing the setup of standardized builds by reusing life cycle build and deployment practices.

"Customers can create the structure of the hierarchy as they see fit," said Maciej Zawadzki, president of Urbancode.

AnthillPro 3.4 includes updates to its integration with the Apache Maven Java programming language project management tool. This allows users to use AnthillPro's Codestation embedded dependency management system in tandem with Maven's repositories. Codestation allows reuse of large-scale components, company officials said.

Zawadzki called AnthillPro "unique to the market" because it can offer build and dependency management, deploy-

ment automation, test orchestration and release management, all in one tool. Comparing AnthillPro with rivals in the build management market and specifically with IBM Rational's Build Forge, he said that AnthillPro has a life cycle model that forms a tie between the build process and deployment process.

"Build Forge is more of a generic process-automation tool, where you can automate a process," Zawadzki said. "That process may be the build process, or it can automate deployment separately from the build process, but there is no tie between the two." ■

NEWS BRIEFS

COMPANIES

Bill Gates has announced that **Microsoft** will donate developer software to the National Society of Black Engineers (NSBE). The software grant provides NSBE educational chapters with a three-year membership to the Microsoft Developer Network Academic Alliance, which will provide access to more than 100 Microsoft software products, including Microsoft Visual Studio and Microsoft SQL Server ... **Telelogic** has made available the Rhapsody Model Driven Development environment for embedded systems and software via the company's University Software Donation Program; among the first schools taking advantage of the program is the American University of Sharjah in the United Arab Emirates ... The **Software Freedom Law Center** (SFLC) has filed two more copyright infringement lawsuits on behalf of BusyBox, alleging violation of the General Public License (GPL). The suits charge Xterasys and High-Gain Antennas with distributing BusyBox illegally without providing the source code as required by the GPL. Previously, the SFLC filed a similar lawsuit against Monsoon Multimedia, which was settled out of court in October.

NEW PRODUCTS

TechExcel has released two new products focused on requirements management in DevSuite. **DevSpec** is an integrated requirements management framework designed to provide visibility and traceability in project requirements. DevSpec allows developers to create new requirements and specifications that can be linked to development and testing implementation projects. The other product, **Knowledge-Wise**, leverages intellectual assets and links ideas and customer feedback to specific areas of a development project ... FirstSQL database product provider FFE Software has released **FirstSQL/J Embedded Mobile Edition**, which is a specialized version of the Java database. This edition includes full support for Java Micro Edition and Java Standard Edition in small footprint configurations ... Device software optimization and real-time operating systems provider Green Hills Software has released its tools for Applied Micro Circuits' **Power Architecture 405EZ** embedded processor. The package consists of Green Hills Power Architecture compilers for generating code, the MULTI integrated development framework and the Green Hills Probe for debugging.



UPDATES

Virtualization software provider VMware has released **VMware Server 2**, the latest version of the company's free virtualization product. VMware Server 2, now in public beta, introduces a Web-based management interface with an embedded virtual machine console, full management functionality, and the ability to create customized remote console URLs for virtual machine users ... Elsinore Technologies, provider of issue management solutions, has released **IssueNet 4.6**. The new release brings a feature called IssueNet Workspace for Project, an integration with Microsoft Project that combines issue and task management with Project's planning capabilities ... dtSearch, a supplier of enterprise and developer text retrieval software, has released version 7.5 of the **dtSearch** product line. There is a new native 64-bit version of the dtSearch Engine for Win and .NET, supporting .NET 2.0 and 3.0, with full API access to dtSearch's terabyte indexer and search functionality, file format and database support ... SSH Communications Security, a provider of enterprise security solutions and end-to-end communications security, has released version 6.0 of the **SSH Tectia** tool. The new version has a feature called SSH Tectia



ConnectSecure, which company officials said expands the range of system platforms that can leverage the secure file transfer and transit capabilities of the architecture.

PEOPLE

Asher Aremband has joined DataDirect Technologies as senior director of research and development for the company's Shadow mainframe integration suite. ■

Serena Does the Mash(up) With Business Suite

BY JEFF FEINMAN

Serena Software has pulled the covers off its Business Mashup suite, which lets developers automate business processes and design and deploy mashups.

The first piece of the suite,

released Dec. 3, is Mashup Composer, a visual design application tool that allows business analysts to create processes, Web forms and other components of business mashups, according to Nathan Rawlins, senior director

of product marketing for Serena.

Those mashups can then be deployed to Mashup Server, an engine that provides the runtime services to help users get their mashups ready for deployment. Mashup Server can connect to

other systems and provides Web forms, Rawlins said.

"The two work in tandem to deliver business mashups as a business solution," he said.

Serena will also be making available 13 prebuilt mashups

for free. There will be mashups for agile project management, case-to-issue scenarios and sales discount approval. "If you're using Salesforce.com for managing your support cases for instance, we have a mashup that makes it possible for support cases to be automatically escalated into an issue management process," Rawlins said.

Other mashups are dedicated to handling employee records and requests, including change approval, travel approval and employee time off.

The Business Mashup suite was built under the code name Vail, a software-as-a-service offering that was originally announced in mid-September. Serena executives had pointed to claims by Gartner that by 2011 SaaS would be a US\$50 billion industry. Rawlins said Serena will offer the Business Mashup suite as a SaaS offering early next year; for now, it is deployed on-premise.

The company has seen what it believes are strong numbers on the mashup front. It reported that more than 1,200 people have looked at Mashup Composer through an online test drive that had been available on the company's Web site, and more than 2,000 people have downloaded the free Prototype Composer simulation tool for prototyping business applications. Prototype Composer, which had been part of Serena's Dimensions offering, became available in early November.

According to Rawlins, most of Serena's interest in mashups was spurred by its ALM customers. "If you think about all the application requests that are coming into IT, there are far more requests that come in than can ever be delivered by an application development group," he said. "So what you end up seeing is that application development takes a chunk of those requests that are coming in, and they start developing them. They tend to be the more complex systems, and the remainder fall into an application backlog, very similar to what we saw when everything was built on the mainframe. You find that most organizations have a huge backlog of application requests."

Serena's goal is to offer a tool for nondevelopers to tackle some of the less technical requests, Rawlins said. ■

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IBM Creates Product Management Centers

BY JEFF FEINMAN

IBM is bringing product management to a center near you.

The company has created a global network of nine Product Lifecycle Management (PLM) Centers of Excellence, designed to help customers implement new technology in shorter time cycles. The Centers of Excellence, announced in mid-November, are staffed by more than 3,000 IBM researchers, 9,000 software developers and 1,000 consultants. IBM enlisted U.S.-based motorcycle manufacturer Harley-Davidson and Canadian aerospace and rail equipment conglomerate Bombardier to demonstrate the centers' capabilities.

The centers have opened up in Nice, France; Böblingen, Germany; Beijing, China; Bangalore and New Dehli, India; Yamato, Japan; Montreal, Canada; and in the United States in Dallas, Texas, and Hawthorne, New York.

"The centers provide the lab environment where [a] client's IT architects and application programmers work alongside IBM software developers to learn SOA integration best practices," said Bob Norton, program director with the IBM Extended PLM Industry Solutions Team.

COMBINING EXPERTISE

IBM is delving into a market segment that company officials claim will reach US\$80 billion by 2010.

The company has already created Centers of Excellence in other areas, including enterprise content management and data integration, with the goal of involving the central software development lab staff directly in customer projects, and cross-pollinating the IBM field service teams by establishing a global working environment, Norton said. "A Center of Excellence brings expertise closer to the client and combines expertise from all IBM software group brands, such as application integration from WebSphere, collaboration from Lotus, and software development and deployment from Rational and Tivoli."

The Centers of Excellence for PLM are already offering seminars and workshops to IBM's business partners. Client executives can work with IBM Global Services teams to determine the steps necessary to incorporate PLM into the company's strategy.

The IBM Product Development Integration Framework (PDIF), which was launched in December 2006, is a set of integration patterns that use IBM's SOA technique combined with PLM software applications. Each

center has deployed a set of integration patterns using the PDIF architecture, but each center uses a slightly different mix of PLM software and business process scenarios, Norton said.

"The loosely coupled SOA

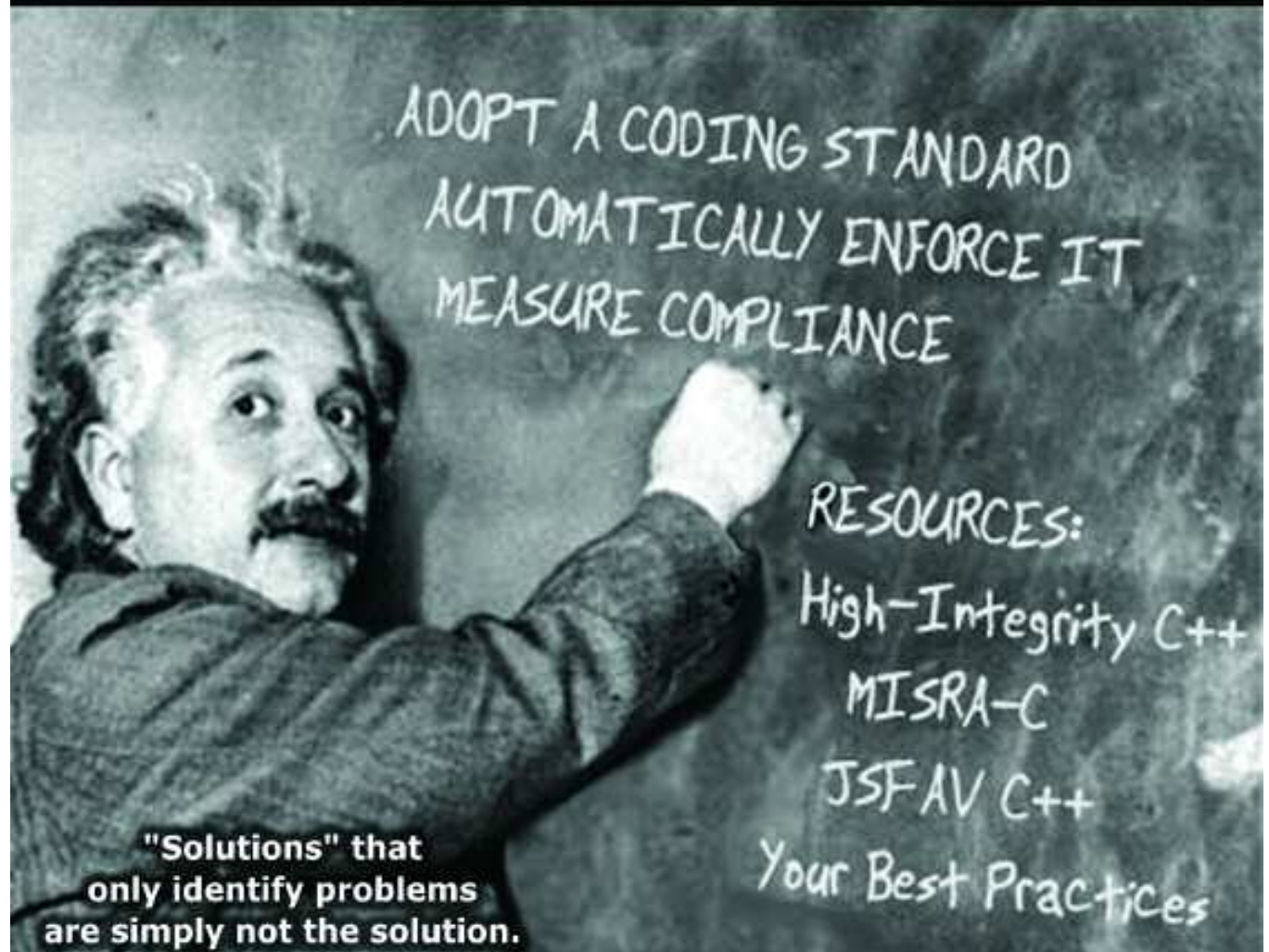
integration technique lends itself perfectly to a framework architecture model that describes application connectors, Web services data models and business processes that embody an integrated PLM software environ-

ment," he added.

The staffs of the Centers for Excellence work with open standards for PLM data and processes, so that business processes can span multiple enterprise applications, company officials said. ■

Intellectuals solve problems.
Geniuses prevent them.

— Albert Einstein



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JSF 2.0 Faces Up to Its Configuration Troubles

Spec leads detail five goals for next version

BY ALEX HANDY

Sometimes, the cure for one's woes is a hard look in the mirror. JavaServer Faces is facing up to its own configuration problems with JSR 314, the specification for JSF 2.0.

The project, under the auspices of the Sun Microsystems-driven Java Community Process, already has five primary goals: make custom components much easier to develop, add first-class AJAX support, incorporate a page description language based on Facelets into the core JSF specification, reduce the required configuration, and provide for better compatibility among JSF component libraries from different vendors.

Roger Kitain, staff engineer at Sun, and Ed Burns, senior staff engineer, are co-specification leads on JSR 314. The pair hopes to make JSF a clearer path between the Web and the complicated back-end systems and capabilities Java provides. That effort will begin with the simplification of the configuration process for JSF applications.

"One of the problems people have had with JSF is that when they sit down and develop custom components with JSF, there are different things you have to [configure] in different areas," Kitain said. "You have to remember these different areas to piece together, like component render associations. We're looking to simplify all that by making fewer areas to keep track of when developing this stuff."

That means adding in the ability to configure components inside of annotations. It also means having consolidating configuration files in easier-to-find places, said Kitain.

For component developers, mixing and matching the capabilities of various JSF snippets has also been difficult, said Burns. "The reason [third-party components] are not playing well together is that the JSF 1.2 specification, and earlier, simply did not say what to do [when] loading...static resources like scripts or style sheets. It didn't say what to do for



JSF remains a stable way to access back-end Java components, says Sun's Burns.

partial tree traversal via AJAX, nor for persistence. Each of those component libraries had to invent their own solutions to do that," said Burns.

Kitain and Burns also stated that those components would need to be rewritten to work with JSF 2.0.

In a world where the Google Web Toolkit (GWT) has made Java-to-Web design as easy as pointing and clicking, Burns and Kitain remain confident that

JSF 2.0 will still hold an important place in Java Web stacks.

"I think the usage model posed by GWT is very intriguing, but what I've seen by talking to customers is that they

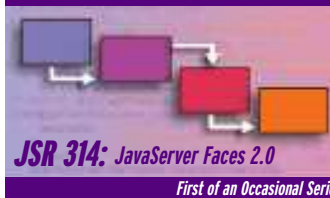
really can't afford to stay inside that intriguing but constrained toolkit Google provides. Right now, they have their RMI interaction where components can talk to POJOs [Plain Old Java Objects] on the server," said Burns.

But when it comes to accessing the forthcoming Web Beans, or the Java Persistence API, JSF will remain a stable and mature solution, he added. In fact, the forthcoming Web Beans specification, JSR 299, is closely tied to JSF 2.0.

Perhaps the most significant change to JSF 2.0, however, is a piece that Burns and Kitain have already begun coding. "For the first time in Java EE, we'll have a concept of a software development life cycle. The developer can say, 'Now I'm in debug mode, or development mode,' and the runtime will know that 'since the developer is telling me this, I can give advanced error messages and advanced stack traces.' If you set that flag to production mode, you'll see friendlier error messages," said Burns.

JSF 2.0 should arrive as an early draft specification early next year. JSR 314 is part of the larger effort toward Java EE 6, and it's hoped that the completed specification and reference implementation will arrive alongside that specification. ■

The Road to Java EE 6



A key element of JSF 2.0 is configuration, says Sun's Kitain.



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iTKO Stepping Up to 'ALM 2.0'

Positions LISA testing tool as next phase of virtualization

BY DAVID WORTHINGTON

Virtualization continues its inexorable march into the software development department.

The latest application: letting dev teams work in parallel.

That's what's being offered by LISA Virtual Service Envi-

ronment, a new solution from iTKO.

According to the company, LISA VSE virtual services are

constructed synthetically from WSDL models or are modeled after existing services and other underlying services such as

databases, enterprise service buses or Java objects. Virtual endpoints define virtual locations for services that need to be invoked.

Aside from lowering the number of test beds, reducing licensing costs and contention on hardware, iTKO says that the LISA VSE lets teams validate SOA implementations across heterogeneous technologies as opposed to developing a selected service or middleware layer in isolation.

iTKO coined the term service-oriented virtualization at a mid-November conference at which it offered the strategy behind the release of LISA version 3.6 in October. LISA is iTKO's SOA testing framework.

'WAVE TO FOLLOW'

A virtualized services environment is a "big thing" and virtualization is the "wave to follow," remarked Theresa Lanowitz, founder of analyst firm Voke. "What you see is most people are talking about virtualization from [the] point of view [of] data center and server consolidation...saving energy, resources, space, etc. What iTKO is doing is a unique offering that takes it a step further. The virtualized service environment will allow decoupling of development and testing teams from dependency on deployed services."

Lanowitz added that accuracy is key. "iTKO is doing heavy lifting around services. With LISA you can do introspection on characteristics [of the service's behavior]—not just playback. It's real in how you test against services."

Chris Kraus, product manager at iTKO, said that more protocols will be supported with each new version of VSE to drive toward interoperability within the test bed. He added that future releases of LISA would tie into the governance life cycle and have further automation of modeling and testing, to facilitate provisioning the environment around the application.

Lanowitz predicted that virtualization will continue to move up the stack in testing. "The cost and time savings are immediate; this is a new paradigm for development and testing," she said. "We are seeing the early effects of virtualization in the application life cycle. It will be a huge part in the next 24 months. Call it Application Life Cycle 2.0." ■



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Compuware's Single Face for Developers

Uniface 9.2 APS offers way to bridge mobile, enterprise worlds

BY DAVID WORTHINGTON

Today's business users want data access anywhere at any time. Consequently, the onus has fallen on enterprise developers to target multiple channels from the desktop to mobile devices and Web services. Compuware believes that it has a solution to make that task less burdensome by reducing a programmer's need for platform-specific knowledge.

ONE ENVIRONMENT

Last month, Compuware announced the immediate availability of Uniface 9.2. The Uniface Application Platform Suite (APS) provides a single environment for application development, business process management, integration and user interface creation.

The APS is composed of Uniface Flow, for process modeling and design; Uniface JTi (Java Thin-client Interface), for deploying network applications; Uniface View, a portal development framework; and the Uniface Web Application Server.

Uniface 9.2 includes new mobile functionality to support Microsoft Windows Mobile and wireless connectivity. Further improvements are support for Web services standards such as SOAP, WSDL and XML Schema, and a mashup maker for building composite applications. It is WS-I -compliant.

Uniface product manager Ton Blanker noted that Flow has been scaled upward to support more simultaneous users and has an updated look-and-feel.

Various versions of Uniface's high-level Proc language target different platforms to keep the programmer within the boundaries of a particular platform, said Blanker. Uniface assembles the software infrastructure while the programmer writes the logic.

The Uniface platform supports the Adobe Flex, IBM iSeries, Linux and Microsoft Windows execution environments, and on the data side, IBM DB2, Microsoft SQL Server and Oracle Database. The Proc language helps developers to deploy applications without drilling down into the respective APIs of the target platform.

Blanker explained that there is a difference in how Uniface's runtimes execute Proc code in

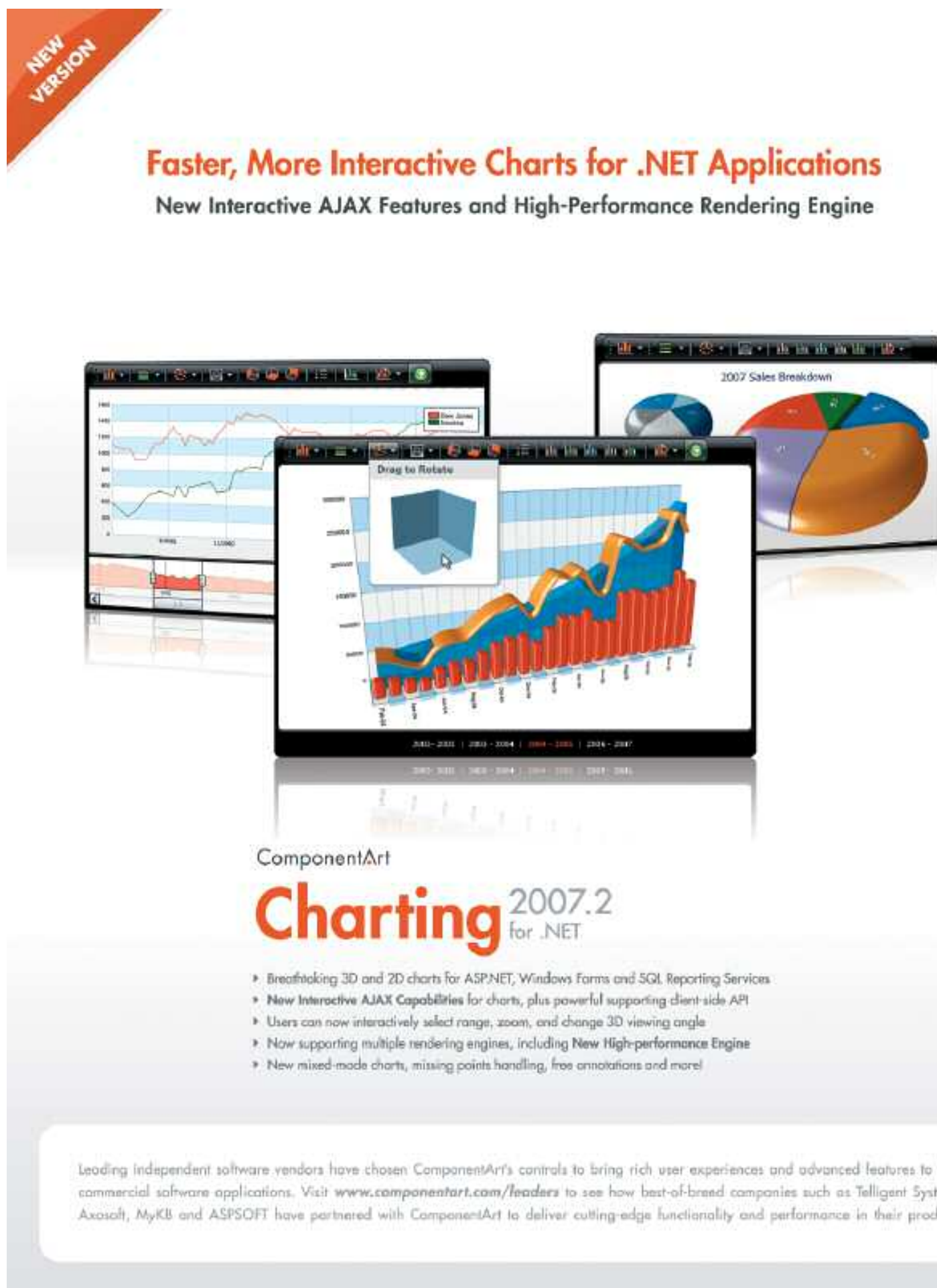
client environments versus Web services setups. The data and operations of services are defined with the Uniface application model. Events are tied to

the modeling environment to trigger operations at the presentation layer.

"The world of mobility and enterprise applications has been

almost completely separated, but these areas are beginning to converge at the architectural, application development (AD) and user interaction levels,"

wrote Gartner research vice president William Clark in a blog earlier this year. "Mobile applications pose a unique set of challenges...and these must be considered along with Web-centric AD strategies so IT can choose architectures that match user requirements, device capability and network availability." ■



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Former ActiveGrid Makes Waves With App Studio

Framework update launches with new name and new Web development tools suite

BY ALEX HANDY

In an effort to shift the tides of fortune, ActiveGrid announced late last month that it would be

changing its name to WaveMaker. The company unveiled version 3.0 of its newly renamed WaveMaker Rapid Deployment

Framework the same day, joined by a new product, WaveMaker Visual Assembly Studio 3.0.

The company's flagship

deployment framework has been refreshed from version 2.5 with the addition of hooks for existing identity manage-

ment systems and a new path to deployment that runs through Visual Assembly Studio.

That studio is a Web-based AJAX and Web development suite billed as "PowerBuilder for the Web." Developers can put together applications from existing code snippets included with it. Visual Assembly Studio is based on software that the former ActiveGrid acquired when it purchased TurboAjax Group in September.

"Developers want easy-to-use, data-driven, visual tools that can build scalable Web applications that meet CIO requirements," said Christopher Keene, CEO of WaveMaker, in a statement announcing the products. "We created WaveMaker's new flagship product line to simplify the development process, accelerate assembly and deployment time, and dramatically improve business productivity—all directly impacting an enterprise's bottom line."

The Visual Assembly Studio is now the preferred method for preparing applications for deployment across grids, claimed Rick Saletta, WaveMaker's director of marketing and product management. Studio also includes close integrations with and support for the Dojo AJAX framework.

Both WaveMaker Visual Assembly Studio 3.0 and WaveMaker Rapid Deployment Framework 3.0 were slated to become available on Dec. 14. The studio is available as a free download, and a beta version is currently available at www.wavemaker.com. Full installations of WaveMaker Rapid Deployment Framework start at around US\$25,000. ■

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Spring 2.5 Arrives for Winter

Renamed support company backs annotation configuration

BY ALEX HANDY

Spring arrived on Nov. 19, just in time for winter.

This seasonal 2.5 update to the popular enterprise Java application framework brings annotations into the forefront of configuration. Behind the framework, its parent company has rebranded itself: On the same date, Interface21 became SpringSource.

Johnson, the creator of the Spring framework and CEO and founder of the now-renamed

SpringSource, said that the changes in Spring 2.5 allow for more flexibility of configuration.

"Spring traditionally has focused on allowing users to configure their code through externalizing configuration in XML files. This means you can change the configuration of your application without recompilation," said Johnson. That was fine back in the days of Java 1.4, said Johnson, but with the release of Java 1.5, annotations popped onto the scene. "There

are times when configuration doesn't change so often, where it's appropriate to place the configuration along with the code."

For these types of situations, Spring 2.5 allows users to simply include the configuration information in the code through annotations.

This gives Spring 2.5 users "the ability to mix and match configurations from different sources: some in XML files, some in source level annotations. The Spring container will

merge all those sources of configuration. Spring will automatically scan your class path and analyze classes to find annotations of interest," said Johnson.

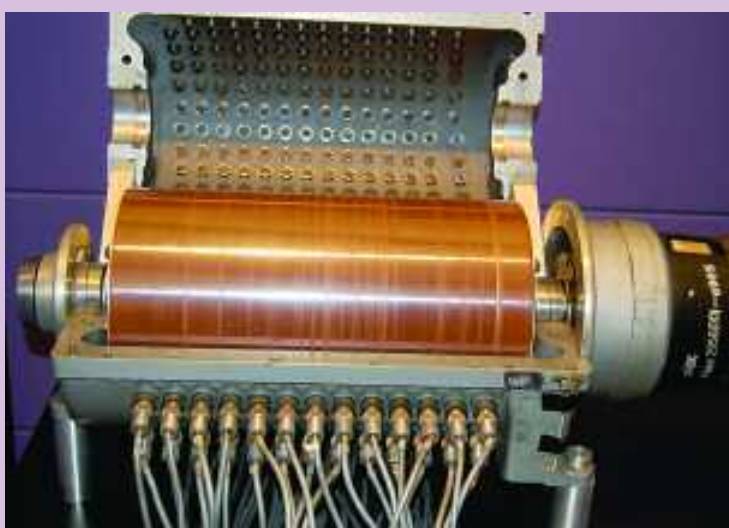
Johnson pointed out that Spring 2.5 is still compatible with all previous versions of the framework. It requires Java 1.4 or higher, and with the release of 2.5, is available as OSGi bundles. That means an application can be updated to Spring 2.5 without any downtime at all, provided OSGi is in the applica-



Users can now mix and match configurations from different sources, says CEO Rod Johnson.

tion server being used.

SpringSource offers classes, support and consulting services for Spring developers. The new name is accompanied by a new URL as well: www.springsource.com. ■



Magnetic Drum Storage Device, circa 1951

ERA

Magnetic drum storage units were some of the first randomly accessible types of memory. These formed the mainstay of RAM in some of the cheaper computers of the 1950s, such as the IBM 650, until magnetic core memory was developed.



GPS Analog Computer, circa 1950

GPS Instrument Company

This analog computer could be expanded through the addition of new components, which would be plugged into one another behind and in front of this complex panel. The machine essentially was a complex modular calculator that could add operations and functions with the plugging in of a cable and the turning of a knob.

OF CABLES, GEARS AND DRUMS

The 10th annual Vintage Computer Festival was held at the Computer History Museum in Mountain View, Calif., on

Nov. 3-4. Machines from the 1950s through 2007 were on display, giving visitors a view into the early days of the com-

puting industry. Here are some of the highlights that were on display at the event and at the museum.



Differential Analyzer, circa 2007

Tim Robinson, www.meccano.us

Every year at the Vintage Computer Festival, Tim Robinson builds a new gears-and-numbers creation from the British version of an Erector Set. This year, he built a differential analyzer, and the device was clicking away madly as it automatically drew out the results of differential equations on this pad of paper. William Thomson originally laid out the principle behind this device in 1876, though he was never able to build it. It wasn't until 1930 that Vannevar Bush was able to build the device at MIT. Now, Robinson constructs variations on the design to entertain at technology events.

NewBrain, circa 1982

Grundy Business Systems

When the BBC put out a call for British technology companies to design a marketable home computer, Grundy Business Systems responded with this small machine. It is arguably one of the first laptop-like machines, other examples of which arrived that same year. When the BBC rejected the Grundy design, around 500 or so of the machines were manufactured independently under the name NewBrain. Defining this and other devices released the same year as the first true laptops makes 2007 the 25th anniversary of the portable computer.



One of the biggest draws at the Vintage Computer Festival is the marketplace room, where old equipment and software can be purchased for garage sale prices. But no one seemed interested in purchasing these two copies of SCO OpenServer, which sat untouched next to these typewriters. Both technologies are now relegated to the scrap heap of history.

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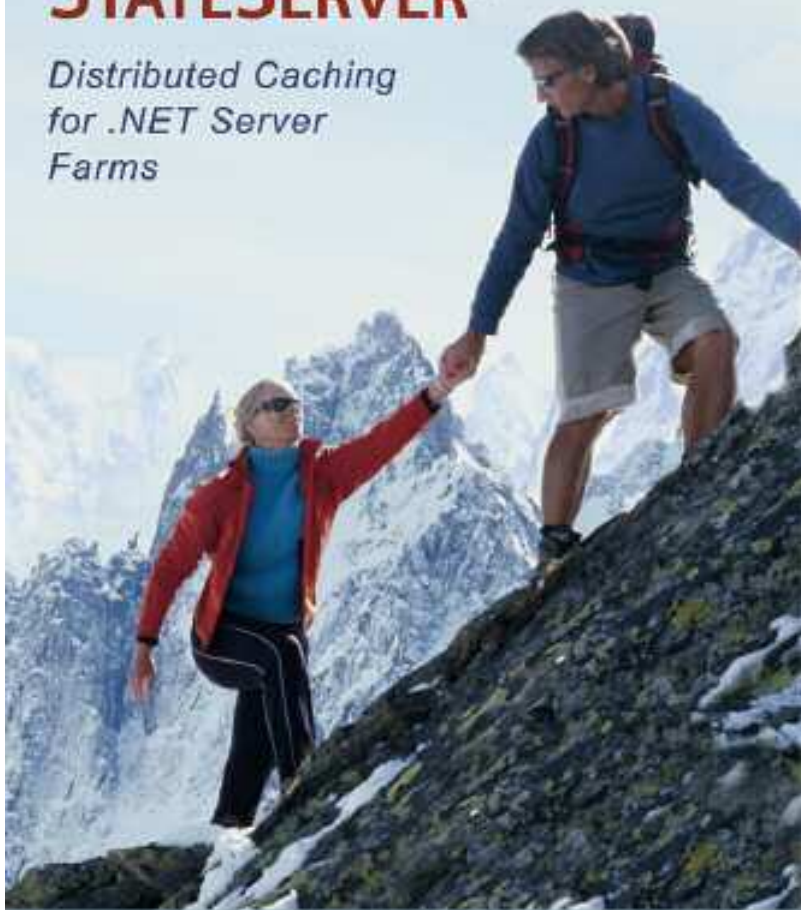
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WSO2 ESB Goes With the Workflow

Ability to schedule jobs is new to bus

BY DAVID WORTHINGTON

WSO2, a company that produces open source middleware for Web services, has added job scheduling capabilities to its enterprise service bus with the aim of helping it work proactively for business users.

Version 1.5 of the WSO2 enterprise service bus (ESB) shipped in mid-November. It is based upon the Apache Synapse 1.1 ESB; however, the company adds a graphical user interface and a service registry with repository.

The update addresses caching, performance and message augmentation, and supports new data targets, file systems and the XQuery language. It also includes the Quartz Job Scheduling Framework.

Paul Fremantle, vice president of technical sales at WSO2, said that the ability to initiate activities at specified intervals, instead of reacting to work, was key to the release. Quartz is used to schedule jobs that drive workflows, facilitate reporting and perform system maintenance.

Reworked service caching enables the ESB to cache responses from services and reply to further requests of the same type, increasing scalability and protecting against throttling or denial-of-service attacks. Logging and tracing have been overhauled to support service-level logs and track particular mediation paths.

In this release, messages may be aug-

mented with information from a database, and conversely, may update fields within a database based on service interactions. This behavior is made possible by the addition of DBReport and DBLookup mediators.

Fremantle explained that message augmentation is useful, for example, to look up a customer's order number as a message comes in, and then add an internal order identifier into the message. "This capability is very important in enabling an existing system to be exposed to partners without exposing the full internal details of that system," he said.

A file system adapter based on the Apache Jakarta Commons VFS project provides a single API for accessing different file systems, including local, HTTP, WebDAV and FTP sites.

Moreover, messages may now be split and exaggerated together. Splitting messages makes it possible to process composite or large messages in parallel whether it is for aggregation, batch processing or message transformation.

"This can be an important bridge between batch systems and real-time systems," Fremantle noted.

The ESB's new command pattern for Plain Old Java Objects makes it possible to write message mediators that distinguish logic from the message format. Developers can use XQuery to manipulate data from XML messages passing through the ESB. ■

CENZIC MAKES TESTING CONTINUOUS

Teams with VMware to create virtual risk assessment

BY JEFF FEINMAN

Cenzic has jumped on the virtualization bandwagon by teaming up with VMware in the latest version of Cenzic Hailstorm Application Risk Controller (ARC).

Cenzic Hailstorm ARC 5.5, which was expected to be released on Dec. 10, has integration capabilities with the EMC subsidiary's VMware Lab Manager and VMware Virtualization Center, which offer what Cenzic calls the ability to continuously test production applications in a virtual environment without the risk of disrupting the environment.

Users can see virtualized machines in the Hailstorm ARC interface with applications sitting on them, company officials said. Cenzic claims that more than 400 new application vulnerabilities appear each month.

The virtual machines can use attacks from Hailstorm ARC to run tests and report results into Hailstorm's dashboard.

"In enterprises today, companies typically virtualize applications during the QA stage and put them into production, while other companies take snapshots of the production application," said Mandeep Khera, vice president of marketing for Cenzic. "Our integration allows users to continuously test applications that have been previously virtualized, or use VMware to take a snapshot of the application, put it on a virtual machine, and then test that with Hailstorm."

Khera said that Cenzic chose to integrate with VMware because of its large installed base, including what VMware claims to be every one of the Fortune 100 companies. ■

BigLever Ratchets Up Gears Framework

BY JEFF FEINMAN

BigLever Software has brought out version 5.4 of Gears, adding APIs for integrating development tools to its automatic product configuration tool.

Gears 5.4, released in late November, offers extended framework APIs for integrating development tools that use internal data models and databases. Gears employs the production line approach with a customer's software portfolio, using feature profiles and blocks of software in a fashion similar to the way an automobile factory can build numerous variations on a design.

The release also has an expansion of built-in text transformations to ease migration from source code used in legacy software assets and programming language-specific block constructs to enable conversion of ad hoc source code block conventions into Gears variation points.

"If you think of runtime blocks, where you might have configuration files that have cer-

tain settings, and then your source code has blocks being controlled in ad hoc ways, what we're doing is providing these language-specific blocks to replace runtime conditionals,"

said Charles Krueger, CEO of BigLever, speaking of the block constructs.

The framework provided by Gears allows the software production line to flow smoothly by

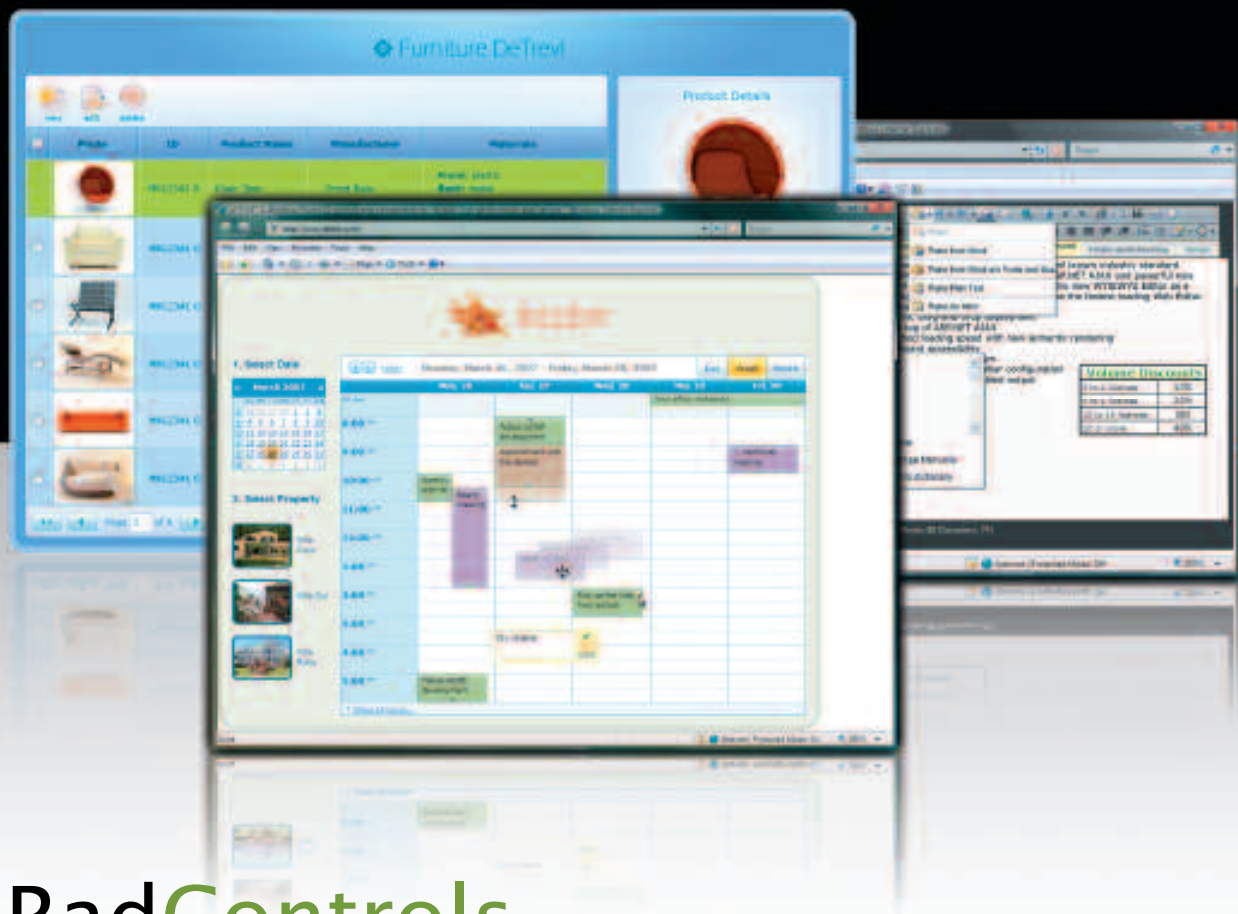
eliminating silos that might occur if companies were to employ product line methods at individual stages of the life cycle, Krueger said.

"As organizations mature in

their understanding of software product line engineering, the issue of an integrated life cycle becomes increasingly important," he said. "The product line problem cannot be solved at any one stage. To be effective, a software product line approach must harmonize the entire life cycle end-to-end." ■

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Curl Tangles With Services

BY JEFF FEINMAN

Rich Internet application platform provider Curl in early November released a public beta of Curl RIA platform version 6.0, which brings a number of new design features and methods for creating mashups.

This release comes with expanded user interface capabilities, and supports JavaScript and Curl's own APIs for building new enterprise mashups. One new feature is a "skinning package" that provides a predefined style sheet, custom images and gradients.

The new version provides access to features such as alpha blending for transparency, with advanced rendering APIs. To build mashups, Curl applications can make calls to JavaScript APIs in a Web page and can be controlled in the page. According to Erica Dennett, a spokeswoman for Curl, this feature, along with the ability to parse and create data streams in JavaScript Object Notation, or JSON, makes it easy to create applications that mix Curl with generally available Internet services. ■

HP Busy With Business Service

BY JEFF FEINMAN

Hewlett-Packard is mixing together business service management and IT service management into one integrated suite.

HP last month announced

Automated Operations 1.0, a suite of tools intended to help transform IT operations by automating the life cycle of managing business services. Automated Operations 1.0 is part of

HP's Business Technology Optimization (BTO) portfolio, which is filled by HP Project and Portfolio Management in the "strategy" category, HP Quality Center as part of "applications," and the

"operations" part of BTO. The latter consists of HP's Business Service Management, IT Service Management and Business Service Automation products, which cover both client automation and

data center automation.

According to HP, the new Automated Operations 1.0 suite brings those three categories together, and helps IT organizations dramatically lower day-to-day costs of operations by automating operational functions and IT processes across the service management life cycle. The suite's purpose is to assist in every technology domain, said Sharmila Shahani, chief marketing officer of BTO products. "We are addressing the management of everything from servers, network devices, storage [and] the application, as well as the underlying software infrastructure across physical and virtual domains."

LINING UP THE PIECES

HP's new Business Service Automation software allows organizations to automate operations across applications and servers. Products in the BSA lineup that are now available include Server Automation 7.0, Network Automation 7.0, Operations Orchestration 7.0, Service Automation Visualizer 7.0, Service Automation Reporter 7.0, Live Network 7.0 and Application Storage Automation 1.0, which is bundled with Storage Essentials 6.0 to form HP's new Storage Automation offering.

HP's client automation and data center automation packages, which make up HP Business Service Automation, are now integrated at the process level with a product called Operations Orchestration, which was acquired in HP's September purchase of Opware. Operations Orchestration integrates different products so the business service life cycle can be managed in a coordinated fashion, according to Shahani. They are also integrated at the configuration management database (CMDB) level, with HP Universal CMDB serving as the central point that integrates all data and operations activities.

The company has also updated several tools within the IT Service Management offering, including Service Manager 7.0 and Decision Center 2.0. Service Manager, which enables automated service life cycle management for business services, has accelerated problem detection capabilities with integrations to Quality Center and Universal CMDB. HP will also offer Service Manager 7.0 as a service, as part of a strategy announced in October. ■



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Intersoft Gets Sirius With Silverlight

BY DAVID WORTHINGTON

If you thought Silverlight 1.0 was only good for eye candy, think again. Intersoft Solutions is using it to create commercial interface components.

Intersoft Sirius is the code name for an upcoming suite of Web user interface components built upon Silverlight 1.0 technology. Sirius provides the same server-side object model as Intersoft's WebUI.NET; components are consumed in the same manner as its other products.

Developers may use both Visual Studio 2005 and 2008 to define the control, and may also customize its Extensible Application Markup Language (XAML). Intersoft CTO Andry Handoko explained that custom

XAML is automatically detected by the control at runtime and applied to produce custom animation effects.

"There are two ways to apply your custom XAML. First, via the XAML property

provided in the control: With the XAML property, you can simply paste your XAML markup string into the property. Second, via the XAMLUrl property: With XAMLUrl, you can specify the XAML file path

where the control should look at the runtime," he said.

A Sirius preview available now features a control called FishEye Dock, which is a navigation control that produces an effect reminiscent of the Dock

in Mac OS X.

Sirius will be integrated with the company's flagship Web-Desktop.NET component. It will be made generally available in early 2008, according to the company. ■

LOGIXML REPORTS IT WILL DO JAVA

BY DAVID WORTHINGTON

When LogiXML chose to optimize its reporting software for the .NET platform, it effectively raised a barrier to its adoption, since Java EE permeates the enterprise. However, that obstacle is no more.

The company made a Java version of Logi Report available on its FreeReporting.com Web site in November. The release supports Java Web servers, such as Apache's Tomcat, BEA's WebLogic, IBM's WebSphere and Red Hat's JBoss, running on Linux.

Logi Report for Java provides connectivity for any JDBC-compliant database, according to the company. Java Runtime Environment versions 1.4 through 1.6 are also supported.

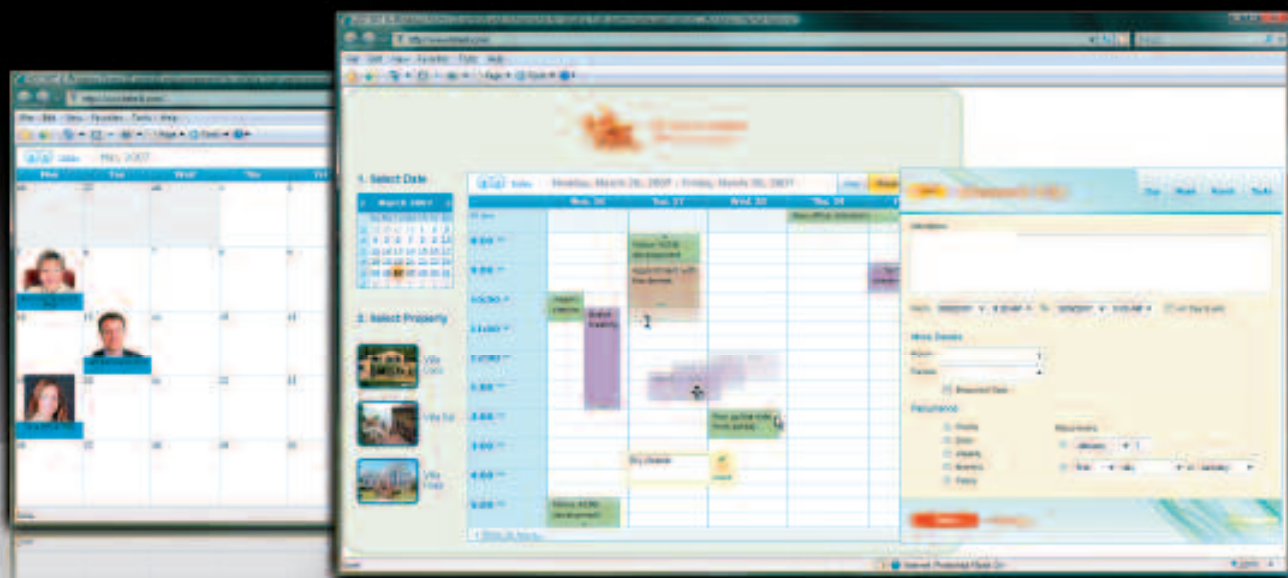
Logi Report helps developers create and publish Web-based business reports. The software provides AJAX-powered charting, crosstabs, data grouping, grill-down and drill-through, and sorting and paging capabilities. Data is stored as XML files, making Logi Report browser-agnostic.

"[Logi Report for Java] opens up the other half of the universe to Logi. Developers can do whatever they prefer from an integration standpoint," said LogiXML CEO and founder Arman Eshraghi.

The final version will ship during the LogiNexus 2008 user conference, which takes place Jan. 13-16, Eshraghi said. ■

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LoadRunner Leads Pack At Testers Choice Awards

BY DAVID WORTHINGTON

It was a new year but a familiar name when Software Test & Performance magazine's 2007 Testers Choice Awards were presented at the Software Test and Performance Conference in Reston, Va., in early November. Mercury Interactive, now a part of Hewlett-Packard, remained ascendant.

HP LoadRunner was cited by a preponderance of the magazine's subscribers as the best testing tool in the

industry. LoadRunner received top honors in the data testing and performance, load and performance testing, SOA and Web services testing, and .NET and Java test and performance categories. The other testing tools receiving the most accolades were HP QuickTest Professional and TestDirector for Quality Center. QuickTest was last year's Grand Prize winner. Software Test & Performance is published by BZ Media, which also publishes SD Times. ■



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HP LoadRunner

Data Test/Performance

HP LoadRunner	WINNER
Compuware File-AID/CS	RUNNER-UP
Intel VTune Performance Analyzer	RUNNER-UP

Functional Test

HP QuickTest Professional	WINNER
Parasoft SOAtest	RUNNER-UP
Compuware Optimal Quality Management	RUNNER-UP

Static/Dynamic Code Analysis

IBM Rational PurifyPlus	WINNER
Compuware DevPartner Studio	RUNNER-UP
Parasoft Jtest	RUNNER-UP

Test/QA Management

HP TestDirector for Quality Center	WINNER
Borland SilkCentral Test Manager	RUNNER-UP
VMware Lab Manager	RUNNER-UP

Defect/Issue Management

HP TestDirector for Quality Center	WINNER
Mozilla Bugzilla	WINNER
Seapine TestTrack Pro	RUNNER-UP

Load/Performance Test

HP LoadRunner	WINNER
IBM Rational Performance Tester	RUNNER-UP
Borland SilkPerformer	RUNNER-UP

SOA/Web Services Test

HP LoadRunner	WINNER
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SPI Dynamics WebInspect	WINNER
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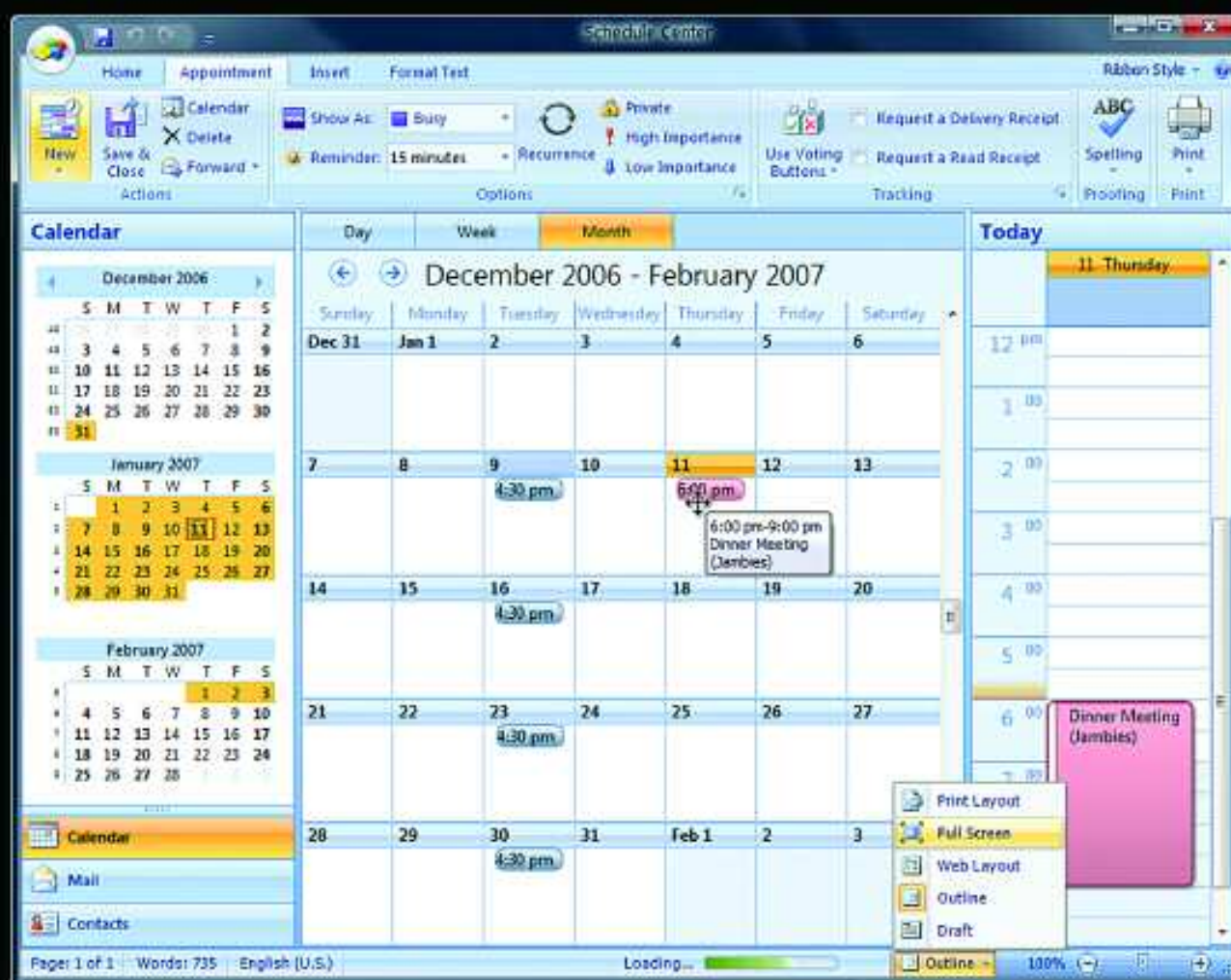
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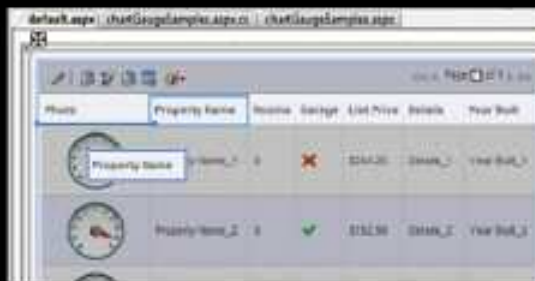
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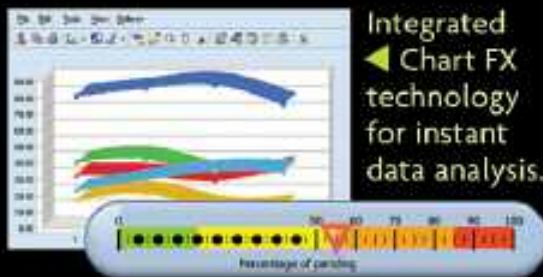
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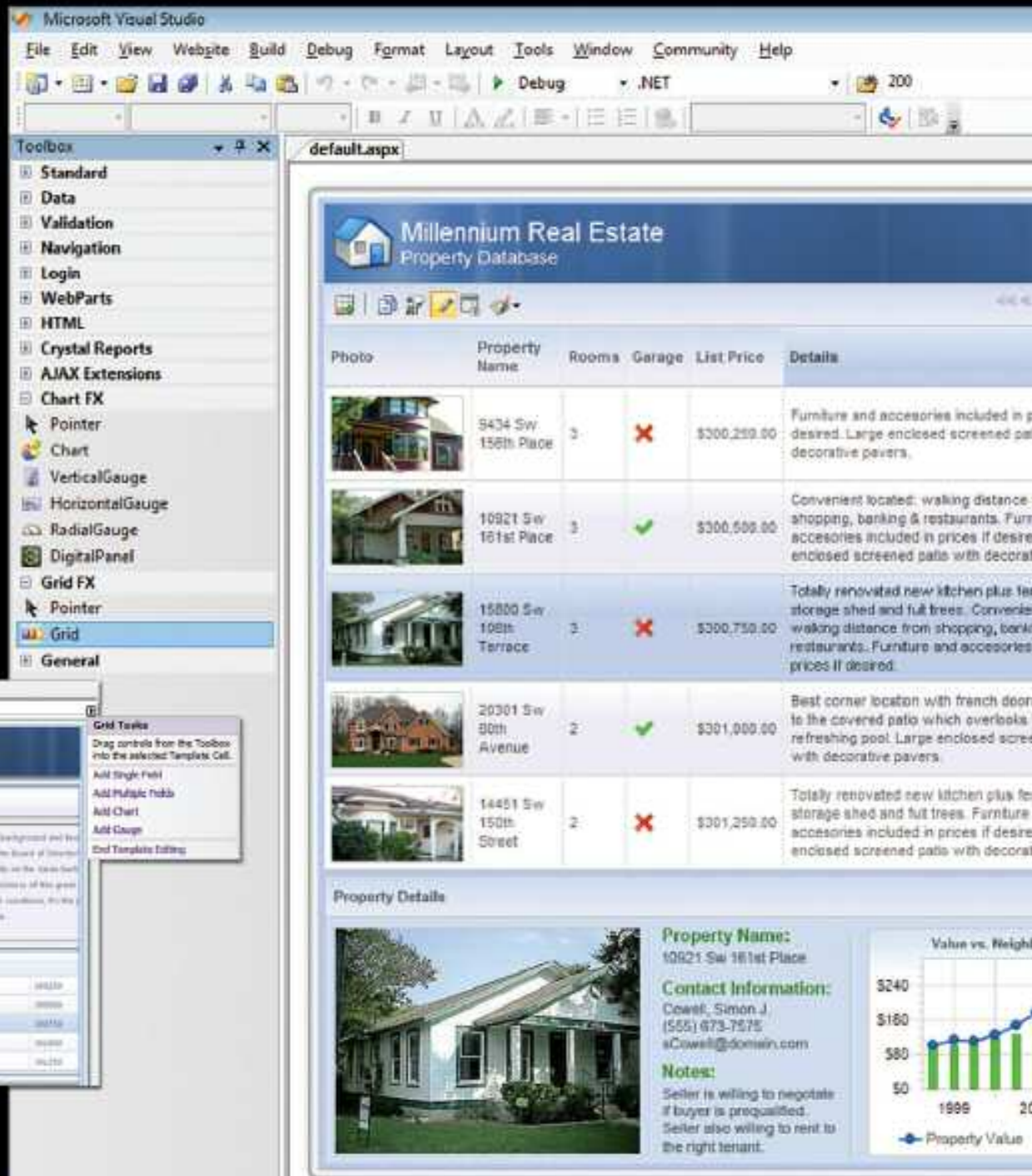
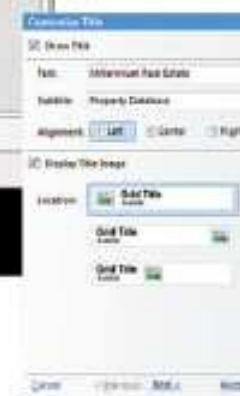


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'Boss' Hogs Limelight At DARPA Challenge

◀ continued from page 1

passed, but in general, he had around 10 developers coding every day, and their highest priority was stability. Breaking the build was strictly taboo.

"Breaking down the problems into smaller problems and then assigning the work, and coming up with an architecture that can solve the problem in an elegant way, is a lot of what I worked on," Salesky explained. "[Also,] integrating all the different pieces: Developers would be making a motion planner or a behavior algorithm, then taking that, testing it and building the system up in a logical progress."

For the most part, the team stuck to free tools. "The primary OS was Ubuntu 6.06; on that we used GCC. Everything we did was written in C++. We used Valgrind for finding memory leaks and other errors," and McCabe Software donated its IQ source code analysis tools. "It helped us focus our energy on where problems might be in the system," said Salesky.

The team also used frameworks to make life easier, Salesky noted. "We used the Boost framework from Boost.org. That's just been a really invaluable set of libraries. They're really well tested and proved to be really handy. For mundane things you don't want to write yourself, like serialization, or taking objects and putting them in a bucket of bits to send over the wire, that was really handy," he said.

PROCESS MAKES PERFECT

All those tools helped to save time, but in the end, Salesky pointed to the software developer's oldest and worst nemesis: deadlines. "From a pure software engineering standpoint, the biggest challenge was integrating all the pieces together at such a rapid pace. We had a year and a half to take it from concept to production. That proved to be a little

more daunting than what most of us thought," said Salesky.

"The way we tackled a lot of that was to have consistent meetings that talked about the architecture," he explained. "Having a source tree that was well partitioned helped. It's important to carve out little boxes for people to work inside of."

In the end, the team found that process was the most important part of productivity. That's not to say, however, that the team adhered to strict rules. "A lot of the process we tried to keep lightweight," said Salesky. "I have a lot of background with really heavyweight process, like long-term military projects with the weight of the DoD on you. I was coming to the academic world and trying to apply engineering practices to bulletproof the process. I learned what parts of the process matter and what parts don't. I think I was able to streamline it to work on the project with this time frame and make it more agile."

He continued, "In the corporate world, you'll tend to have a whole bunch of developers in a room doing a code walkthrough. We just didn't have the time, [so we started] doing an offline code review: You ask someone to go review these three classes and let me know your thoughts. But you're still getting the benefits of the code review. Tweaks like that helped to keep some process around so it's not kamikaze software writing, but allowed us to still have oversight over the things being built."

That agility in development translated into a more agile and capable robot. With a US\$2 million prize handed over to the university, the Tartan team is still working furiously to finish its final report for DARPA. Salesky's back to work with the NREC, with only the newspaper clippings to show for his work. ■



The winning team from Carnegie Mellon University poses with a very big check.

Photo courtesy of Carnegie Mellon University

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CodeGear Steering Own Course for Developers

◀ continued from page 3

things that still need to be improved are the team and collaboration parts and bringing process into the RAD world.”

That's no small feat in an

industry where many developers still cling to vi and Emacs. But Intersimone has a strategy for luring the grognards away from their command lines.

“When I look at people using

programmers' editors, they also seem to have several instant messaging windows open, and they're context switching—alt-tabbing—using the desktop as a pseudo-environment. We believe

in the richness of an integrated and open environment that gives you the best of the command-line world and the best of the programmers' editor world,” said Intersimone. He pointed out

that CodeGear's Third Rail editor for Ruby includes a command-line interface.

Vishy Venugopalan, software developer tools analyst at the 451 Group, said that CodeGear needed to escape from Borland to be successful. In Venugopalan's opinion, Borland was too concentrated on the low-volume, high-value multimillion dollar deals to be paying attention to the markets CodeGear now plays into. With its high-volume, low-price IDEs, CodeGear wasn't getting the sales and marketing support it needed from Borland, he said.

Venugopalan recently finished a report for the 451 Group on CodeGear and discovered that the company is heavily dependent on its Delphi line of products.

“Two-thirds of their business is still from Delphi. They may not be able to make deep inroads into Java development communities because, fundamentally, they're still competing on a feature mindset, where Eclipse, and the Java world, has moved to a community mindset. But I think they realize it too, and that's why they're doing tools for PHP and Ruby. Tools for these dynamic languages are still relatively immature,” said Venugopalan, who sees this as an opportunity for the company's future growth.

NEXT STEP: INTENT?

The future for Intersimone is still feature-based. He sees numerous possible avenues for developer productivity improvements, and new tricks and time-savers usually translate into powerful new features. For Intersimone, one of the biggest potential time savers is metadata.

“As frameworks solidify groups of functionality, what's missing is: ‘How do we capture the intent and the knowledge of the person who built the framework?’ You can document it; you can embed comments in the code; you can put the models in with everything. But how do you capture the intent? The next logical step is for the architecture to continue to capture the structure and evolution and logic behind the developing of the application. That kind of knowledge in the past has been kept in people's brains,” said Intersimone. ■

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Large Screen or Small, It's 'One Web'

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The broader message of the address delivered by Berners-Lee at the conference is that the growth of the mobile Web depends on adherence to the

open standards—such as HTML, HTTP and Cascading Style Sheets—that have made the wired Web possible.

“Whether content is delivered on a mobile device with a

2-inch screen or a desktop computer with a 30-inch screen, there is one Web,” said Berners-Lee, director of the World Wide Web Consortium (W3C). Without naming Apple, he crit-

icized the company for its “proprietary system, which lets you download music from only one store.” The Web is designed to be universal, to include anything and anyone, he said.

“People want to choose their hardware, their software, their content.”

OK FOR MOBILE?

His talk, titled “Escaping the Walled Garden: Growing the Mobile Web With Open Standards,” emphasized the importance of ensuring that Web sites work well with mobile devices, not just laptop and desktop computers. It coincided with the W3C announcement of the mobileOK checker. Available in an alpha version (validator.w3.org/mobile), the tool lets developers and designers test a Web page to determine how well it's suited for delivery on mobile devices.

Entering the URL www.google.com, for example, in the mobileOK checker resulted in some positive feedback, such as “The markup of the page is well-formed and valid,” and “The page provides caching information.” But problems were noted as well: “The page uses a free text entry at line 3 column 1460, but doesn't specify a default input mode for it.”

The mobileOK checker runs tests based on the W3C best practices for delivering Web content to mobile devices. Examples include: minimizing the number of keystrokes users are required to enter, offering preselected responses, providing caching in HTTP responses, and avoiding table formats and other layouts that mobile devices don't render correctly. “Many of the best practices are in fact good Web design principles, so the whole site will be easier to use for anyone,” said Berners-Lee.

At the conference, Berners-Lee also said the Web is moving toward a time where users are developing an increased awareness of public and private content. “When they put stuff in a public place on the Web, they will [realize that's what they are doing].” Better ways to manage privacy will emerge, such as setting policies that let content on a social networking site expire after a designated period of time. That way, when kids divulge information about themselves, they know that the content won't remain there forever, he said. ■

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Council Establishing Secure Programming Standards

◀ continued from page 1

application faults; be familiar with attack scenarios, such as eavesdropping, man-in-the-middle and passerby attacks; be able to write programs that read input from interfaces; and properly validate and output the data. Programmers should be familiar with cross-site scripting and Scheme Widget Library injection.

Moreover, Java programmers must understand when and how to use encryption to protect sensitive data, understand the security implications of built-in data types and Java-specific memory management, and the architecture-level issues and coding practices that contribute to security.

MORE INITIATIVES IN WORKS

Once finalized, following a 60-day comment period, the council will publish the essential Java skills document for all to use. It is undertaking additional minimum skills initiatives for C, C++, .NET languages, and Perl and PHP.

The push for the exams is a joint effort of CERT/CC, SANS Institute and several U.S. government agencies, as well as leading companies in the U.S., Japan, India and Germany. The council stresses that programmers' skills be combined with an effective secure development life cycle.

The GIAC Secure Software Programmer Certification Exam for Java will be administered in December in London and Washington, D.C., and in 15 other cities in Europe and the U.S. over an eight-month period.

"I'm glad that they recognize that producing secure, quality code goes beyond programming, and that these skills must be 'combined with an effective secure development life cycle,'" said Rex Black, president of Rex Black Consulting Services and president of the International Software Testing Qualifications Board. "I'd like to know when—or whether—they intend to start certifying development leads, test leads, development managers, test managers, project managers and product managers in that vital area."

Black noted, "Programmers with secure programming skills who work within development life cycle processes or organizational cultures that devalue or

ignore security in particular, and quality in general, won't make much of a difference."

Stephen Northcutt, president of the SANS Technology Institute and founder of the GIAC

certification, responded that the council has put in a lot of effort to get as far as it has with consensus, noting that there is no single life cycle methodology. He disclosed that it is in discussion

with Chris Webber of Casaba Security to create free Webcasts and paid training on the Microsoft life cycle approach.

Northcutt said the council has two dedicated evangelists

that are approaching other organizations and reaching out to software testing companies, thought leaders and Web security companies to bring more people on board. ■



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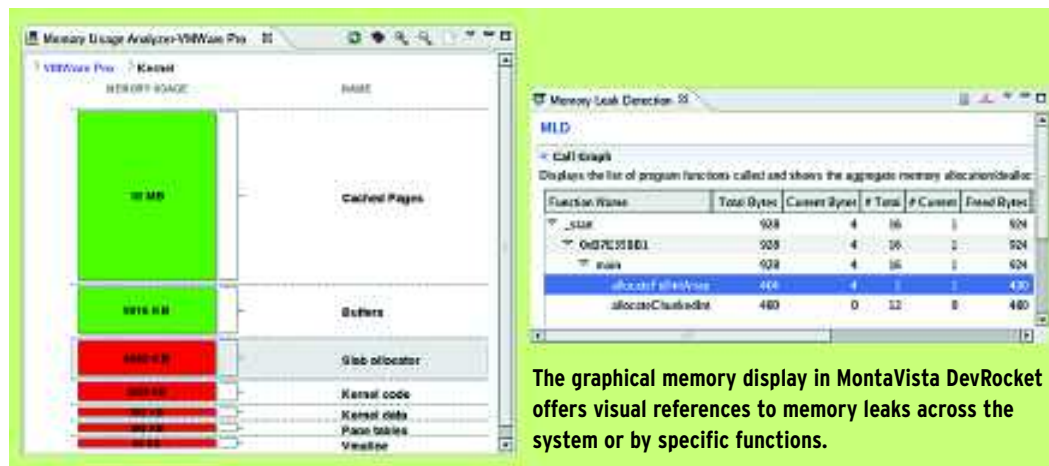
Update includes SELinux security, new monitoring, debug features

BY P.J. CONNOLLY

To those who remember when Linux was strictly a hobbyist operating system, it's nothing short of incredible that, in less than a dozen years, it's found not only in consumer devices such as TiVO but at the most demanding levels of reliability in so-called "carrier grade" telecom equipment.

MontaVista Software refreshed its entry in the market, announcing MontaVista Linux Carrier Grade Edition (CGE) 5.0 last month. The new release is scheduled for availability on Dec. 17 for Intel and PowerPC platforms, with MIPS support due in the first months of 2008. It can be used with network equipment from a list of providers, including Alcatel-Lucent, Iskratel, Motorola and NEC.

CGE 5.0 is built around the Linux 2.6.21 kernel and the Carrier Grade Linux 4.0 specification, and features a unique runtime patching technology



The graphical memory display in MontaVista DevRocket offers visual references to memory leaks across the system or by specific functions.

that the company claims allows field engineers to apply binary patches to an active system without requiring reboots or other downtime.

This release is the first carrier-grade operating system to include the NSA's Security-Enhanced Linux (SELinux), according to MontaVista. SELinux focuses on role-based access control and works on an allow-deny basis with any com-

ponent or object within a system. CGE 5.0 also includes the SLIDE integrated security policy development and deployment system, which plugs into MontaVista's DevRocket IDE and allows graphical security policy configuration.

As well as the security plugin, the DevRocket IDE receives new development and debugging components as part of the CGE 5.0 release, cover-

ing memory leak detection and usage analysis, performance profiling and system tracing. Also presented in the IDE is a live RSS feed from the company with product updates and defect resolutions.

New in this release too is the Flight Recorder, which acts like an airplane's "black box" to track and log system history and behavior. Flight Recorder maintains a scheduler history that the compa-

ny says provides more information than a simple crash dump, and can be extended for customized tracking and diagnostics.

The CGE update includes a refreshed MontaVista Field-Safe Application Debugger, designed to make it easier to use with live systems without halting execution or taking the system offline. Live core dumps are also possible with CGE 5.0, halting an application for a small fraction of a second to snapshot memory. MontaVista claims this can be done with pauses of hundreds or even tens of milliseconds.

High-resolution process accounting is also available in CGE 5.0, allowing engineers to monitor and predict CPU loads, according to the company. So-called "microstate" accounting can improve network performance by allowing the design of effective load balancing and graceful protocol degradation schemes. ■

Xilinx Kindles Soft Processor Fire

New MMU in MicroBlaze 7 allows use of commercial OSes

BY P.J. CONNOLLY

Xilinx was on fire in November, launching the latest version of its MicroBlaze 32-bit software-based processor and a new FPGA-based accelerator for the Intel Front Side Bus, as well as updated versions of the company's developer tools.

MicroBlaze 7 features a new memory management unit that the company claims is the industry's first configurable MMU to enable commercial-grade operating system support. Xilinx intends the new MMU to support both the volume-oriented Spartan and the high-performance Virtex lines of FPGAs.

"Microprocessing is moving into FPGAs" to meet the requirements for "soft" processors, explained Xilinx senior product manager Jay Gould. "There are certain kinds of performance advantages and other flexibility advantages to moving the processing into the FPGA. We offer a lot of other options rather than just adding another processor chip on your board or clocking the core faster," he added, because those fall victim

to diminishing returns.

LynuxWorks was the first embedded Linux provider to jump on board with Xilinx, releasing a MicroBlaze platform version of its Blue Cat Linux the same day, Nov. 14. LynuxWorks vice president of marketing Robert Day noted, "What we're really trying to do is offer software developers a natural, com-

fortable platform to develop their applications on, even though it's running on a configurable hardware platform."

The new MicroBlaze processor also features new floating-point unit instructions intended to boost FPU performance, and an updated interconnect with the CoreConnect processor local bus (PLB) that

allows the scaling of interfaces from 32-bit to 128-bit designs. The PLB also allows developers to connect with memory controllers in point-to-point or shared topologies, and supports full-duplex DMA engines.

The Xilinx Platform Studio was also updated, with new features in the Base System Builder wizard to support the multiport

memory controller, and a new clocking wizard. The Eclipse-based SDK now offers support for remote debug and Xilkernel support, allowing developers to use memory protection on MicroBlaze processors.

Meanwhile, the company also announced its first FSB accelerator designed for the Intel Xeon 7300 series of datacenter servers. The Accelerated Computing Platform M1 is based on the company's Virtex-5 FPGA and uses an Intel-designed abstraction layer. ■

NOVELL'S SUSE RTOS GETS AN OVERHAUL

BY P.J. CONNOLLY

Sometimes, what's in a name is a road map. Novell brought its real-time Linux offering into line with the naming of the rest of its SUSE Linux family when it released SUSE Linux Enterprise Real Time 10 on Nov. 27. The second release of the company's RTOS offers updates that aim to reduce system latency and improve predictability.

Although both the first and second releases use the company's SUSE Linux Enterprise Server 10 as a foundation, this version is more fully integrated with the underlying Linux OS,

said the company. Novell worked with the open source community to supply the real-time components in the update, which was built on the 2.6.22 kernel, explained Kerry Kim, Novell's product marketing manager for SUSE Linux Enterprise Real Time, or SLERT.

The initial release's real-time capabilities came from work Novell did with Concurrent Computer, Kim noted, and were later released into open source. Concurrent remains in the family picture for SLERT, which is "fully instrumented" for the company's NightStar debug and

analysis tools, explained Concurrent president and CEO Gary Trimm in a prepared statement.

The RTOS update adds new features for pre-emption, including priority inheritance, sleeping spinlocks and thread run interrupts. The first allows lower-priority processes to inherit the priority of parent processes, while the second allows developers to free up resources for higher-priority processes by suspending lower-priority resource locks, or spinlocks. Finally, kernel run interrupt threads allow hardware and software interrupts to be pre-empted by higher-priority

processes as defined by the user.

SLERT 10 lets users define how processes and threads are assigned to individual processor cores, claims Novell, and isolates real-time services from other system functions with the aim of improving reliability.

Also new in this release are timer kernel services that operate with a much finer degree of accuracy, noted the company. The low-fidelity POSIX timer service from the initial release ran with a 40-millisecond resolution, but the new implementation cuts that to just 2 microseconds. This allows Novell to claim that system processing can now be accounted for by the nanosecond. ■

Keeping Data in Sync

Organization, scoping and security the keys to effective synchronization

BY P.J. CONNOLLY

Going mobile might have been the dream of the vagabond in Pete Townshend's song, but for developers, it can be a nightmare.

Increasingly, end users—many of them with corner offices and highfalutin titles—are demanding that corporate applications be mobilized and given access to company data without regard to location. Of course, it's one thing to give people access to data, and another to let them work with it, because the second case brings up the question of how that remote collection of data gets synchronized with the corporate data store.

But what options are out there for developers new to the mobile arena? We spoke with representatives of the leading providers of database platforms, to see what advice (and consolation) they could offer the neophyte mobile developer charged with mobilizing data while

keeping it secure—truly a contradictory assignment.

SETTING EXPECTATIONS

The first step, explained Aberdeen Group's wireless and mobility research director, Philippe Winthrop, is cutting the scope of the project down to the barest minimum. "The key to developing any good mobile application is really about going and doing a business analysis around what is core versus context," he noted.

"It's not about trying to put the kitchen sink in there," Winthrop said, "but really making sure that you've only got what is absolutely necessary, and that you spend an extensive amount of time on the usability testing to ensure that the application is going to, as efficiently as possible, do what it is intended to do. It becomes that much more critical on such a small device, that has such a thin pipe, where it's very limited in terms of the screen size."

Anthony Carrabino of Microsoft, senior product manager for SQL Server, noted that putting data in the hands of mobile workers is only the start.

"It's not good enough to get the data out to them; what you

really want to do is to get those users to edit and update that information and follow them wherever they go, so that when they get connectivity, the connection happens in a very reliable way."

His colleague, program manager Liam Cavanagh, added: "Realistically, even with the coverage of cellular networks, it's not prevalent to have connectivity wherever you go. So that's why we have synchronization: being able to take the information that's important to those workers and be able to put it onto a mobile device, so that they can access it regardless of whether they have a connection or not."

Part of that initial scoping is making sure that synchronization is taken into consideration from the get-go. "One of the most common things that we hear from our customers when we start talking about sync is that it's sort of an afterthought," explained Roger Kehl, senior product manager with Sybase's iAnywhere Solutions. The mobile application designed by rookies will have UI and essential functionality, he noted, "but

the office and goes away for a weeklong business trip and comes back to the office to sync up, and there's everything in between."

Oracle's vice president of embedded systems marketing, Rex Wang, agreed: "Clearly, there's more data that lives outside the datacenter, at the edge, in the embedded world and in the mobile environment." He added, "The basic challenge related to synchronization is the need to enable an offline or occasionally connected function. You have a need to store that data locally...not only store it, but process it locally. You can't expect your end users to back up the data or [work] with the schema on their handsets. This thing needs to be centrally or automat-

ically administered by the application."

Developers, explained Wang, need "to look at this holistically, from an end-to-end perspective; think of it as managing the entire application life cycle. You need to develop the application, and you need the right kinds of tools and IDEs, things like that; you need to deploy it, [and] you need to provision your users and the devices with those applications while the users are using them; you need to deal with synchronization as well as user management and monitoring. Later on, you might need to enhance your application, to upgrade it, etc."

THE NUMBERS GAME

Although limited connectivity is a valid concern today, some are already looking past the mobile data store model to one of ubiquitous connectivity. IBM Software

they don't really architect right from the beginning with the idea that when you're building a mobile application, you fundamentally have to be thinking about synchronization" from the start.

"You have to think about how often are users going to be online or offline," Kehl added, "what kind of functionality do you want to provide when they are offline, and how long might they be offline. If you have an application that is occasionally connected, where your connection is broken every few minutes, but only for short periods of time, that is fundamentally different from someone who takes a mobile application out of



Is Getting Easier

Group's senior competitive specialist for information management, Reed Meseck, argued, "In many respects, I think we're moving from an era where we were trying to do synchronization with thousands of devices, to an environment where it's no longer practical to do synchronization to millions or billions of devices."

He continued, "There is an environment for synchronization, but I think today we have expectations of on-demand data, of immediacy. What's the point of having the data on a mobile device if it's out of date? The whole reason I want data on a mobile device is because I want it now."

Meseck is convinced that the time for on-demand data is now, if only because that approach eliminates the whole problem of syncing data. "I think there's a huge impetus to move to applications that don't really rely on the data being stored in the device. The more data you store in the device, the more difficult it is to keep synchronized."

Why? "These pieces of data stored out on remote devices effectively become a distributed

DOLING OUT DATA

How one's data is organized is extremely important, the experts agreed. "To start off," noted Sybase's Kehl, "you have to think about how you want to partition the data in such a way that each user has the right data to do their application, but not more than what they need. You want to minimize the amount of traffic that gets sent over a network; you want to minimize the amount of data that you actually store on a device, because some of the devices that people are working with are pretty memory-constrained."

"The challenge there as a mobile application developer," Kehl continued, "is how do you partition the data in such a way that each mobile user only gets what they need, exactly what they need, and no more than that. It makes the sync performance better, [and] it makes the application perform better on the device, and it minimizes the system and storage requirements."

Conflict detection, whether between the data of two road warriors, or between that of the field force and the

the temporal nature of data. "When is becoming a very important dynamic." His solution can be found on any milk carton: "Even if they've cached that data, they're going to need to...put up a freshness date on the data," one that says: "Yeah, this data's a little old, but here's the full disclosure." You have to reveal what the age, what the vintage of the data is."

SECURITY IS KEY

Aberdeen's Winthrop sees security vulnerabilities as posing the greatest risk for developers of mobile applications. "These enterprise devices are extensions of an individual's office. So with that, there are tremendous issues around what is going to be held on those devices, compounded by the fact that you now have storage cards that are in excess of 2 or 4 gigabytes. You can now have a tremendous amount of information on your intelligent device, your smartphone, whereas in the past, that wasn't necessarily the case."

continued on page 34 ►

caching problem," Meseck explained. "If I can check to see if the data is stale or fresh, I can probably just as well get the data. The amount of data you can display on the device is limited...you have to check to see if the data's coherent or up to date, [so] you might as well get the data now, and get the latest data. Why have it a minute old, if I'm already sending a transaction to the system?"

Meseck admitted that there are plenty of places where this won't be possible soon, if ever. "Applications for devices like that are starting to shift more to an 'if there's any way to be connected, be connected' approach. But for those rural areas or those instances [where you're never going to have a decent connection]," he continued, "there are still going to be applications where you may need to persist the data. But you want to be very careful about the data that you're acting on because, again, stale data can be a very dangerous thing."

home office, is another beneficiary of proper partitioning. It's important not just to detect conflicts, Microsoft's Cavanagh explained, "but to resolve them in a way that fits in with that organization's business logic."

"These can get very complex," he continued. "So what you want to try to do is to filter information between each of the users...to minimize the chances of colliding data changes or conflicts by partitioning the data. Filtering that information from user to user" is key to any offline or collaboration effort.

Part of the problem behind reconciling the changes of many users, explained IBM's Meseck, is



Data Synchronization Is Getting Easier

◀ continued from page 33

Winthrop pointed out that mobile users are utilizing what amounts to a public network as they roam from hotspot to hotspot. "When you look at mobilizing applications, and not just messaging" but collaboration, or accessing back-end ERP systems or executive dashboards, "one of the keys is making sure that there are VPN connections being enabled for those devices. That's of critical importance to ensure that there is not just security on the device itself, but that the actual transmission of data is done in a secure fashion."

But it doesn't stop there, Winthrop cautioned. "You also have to make sure on your back end, when you have the connectivity to your internal infrastructure, that you have the proper authorization and authentication policies in place to ensure that only the appropriate people have access to the systems in question." Both Sybase's Kehl and Oracle's Wang agreed that developers of mobile applications can't take data security for granted, as they might do on an internal network.

TOOLS FOR THE JOB

Choosing the database itself is dependent upon the task at hand. "As trite as it sounds," Winthrop explained, "it really

depends on the kind of application that you're looking to mobilize. I've seen vendors who are developing mobility frameworks that allow you to create mashups, [leveraging] disparate data sets across the enterprise into one application, that absolutely is going to require a relational database. However, there may be a very simple application that has no need for that, and why over-engineer the thing?"

Although relational databases aren't the only choice for a mobile application, if data synchronization is involved, they are often the most efficient one.

"There are real benefits to using a more robust data storage mechanism like that," explained Kehl, "versus a flat file or an XML representation. There are great things we're able to do [via Sybase's MobiLink technology] with synchronization as far as handling conflicts, as far as uploading stuff as a transaction and being able to roll back—all that sort of thing comes from...using a robust database on the client. Your options and your flexibility for doing data synchronization increase...both in terms of the application performance and the richness and robustness you can get in that application."

But don't look for the database engines to get any smaller. Although

mobile devices are famous for their resource constraints, the brilliance of hardware engineers is putting ever-increasing amounts of power in users' hands. Oracle's Wang explained that this reduces the need for the company to spend its time on reducing the footprint of the DBMS: "By the time we shrink our software, the devices will be much more powerful. We think we're small enough in that regard."

What may be more important to customers is providing a flexible solution that isn't too closely aligned with a particular back end. Microsoft's recently released Sync Framework, noted Carrabino, "is not designed to be a proprietary technology. We've made it to be a generic solution to solve the fundamental challenges of synchronizing data." Since it came out of the company's SQL Server efforts, Sync Framework plays well with the long-awaited SQL Server 2008 via extensions through the ADO.NET provider, but "by and large, it's a general-purpose synchronization framework."

PROMISING FUTURE

So, is synchronization bound to become less of a developer's bad dream? Kehl believes so: "There's the first stage, where people look at it and say, 'This is

dead easy; there's nothing to it.' Then they realize how complex it is, and they say, 'This is so complex, I can't even build a mobile application.' Then they get to the third stage, where they realize there's software out there and there's expertise out there that can make this doable."

Mesek agreed on behalf of IBM, saying, "You'll find that there will be continued, increasing capability in these mobile devices and as that becomes more the standard set of features, you'll still see specialization outside of it, but I think there will be more variation, as opposed to specialization. It's a natural cycle of the way things occur." But, he added, "I don't think the toleration for stale data is going to be there for much longer. If there's any toleration out there, I think it's quickly diminishing."

Carrabino said, "It's going to be very interesting over the next five or 10 years to see what kind of applications really start coming to life" with synchronization. "I'm curious to see what kind of ecosystems start to be created; where applications that are sync-enabled start participating in a sync ecosystem and start collaborating, and all sorts of information starts to get synchronized across various applications." ■



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FROM THE EDITORS

Security Skills Essential

We endorse the Secure Programming Council's Essential Skills initiatives for secure programming. Its emphasis on an effective secure development life cycle is the right approach, and it is high time the industry cooperated to address security flaws in Web applications.

Personal and other sensitive information is falling prey to malicious hackers that sell it for money or to be used by national intelligence agencies. In a world filled with consultants, employee turnover, new hires and outsourcing, there must be a standard way to assess competency.

The value of fiat certifications is greatly influenced by the people standing behind them. The council has assembled a group of organizations both corporate and governmental working under the banner of the SANS Institute, and it is pounding the pavement to broaden its support. Its value is established and can be relied upon.

Organizations already participating in the effort include CERT/CC, SANS Institute and several U.S. government agencies, in addition to leading companies in the United States, Japan, India and Germany. It has the big names and resources to make headway.

The SANS Institute security certification entity, Global Information Assurance Certification, has been in operation since 1999 and has the gravitas and experience to certify programmers effectively. Also, its tests are organized by security-related tasks that programmers perform regularly and are applicable in real life.

The aim and scope of the council's efforts are broad and comprehensive. The Secure Software Programmer Certification Exam for Java/Java EE will be the first exam offered, and initiatives are under way for C, C++, .NET languages, Perl and PHP. The certification approach is also ISO 17024-compliant.

Although there is no single methodology, the council is working to find consensus and promote training. In total, the council is doing the right things for the right reasons. We can only hope that the long-term effect will be a change in how software is developed, to harden systems that are vital to commerce, industry and the public sector.

End for Mobile Development

Today, software development for mobile devices is a hot topic for many enterprises, especially for ensuring that their Web applications run properly on smartphones and PDAs.

Soon, we hope this will be a lost art. Not because mobile devices cease to be important. On the contrary, they're becoming more ubiquitous every day. But rather, because mobile devices and their networks are converging quickly with standard PCs and wireless LANs. Someday, the distinction between a mobile app and a standard app will disappear.

Tim Berners-Lee, director of the World Wide Web Consortium, recently laid out a vision of mobile computing that calls for just that. His voice speaks not only to his vision, but to the increasing reality.

Consider that Apple's iPhone contains a full browser, Safari.

Consider that Sun has said that the differences between Java ME and Java SE will narrow and disappear.

Consider that AJAX and other RIAs transfer much of the workload back to the server, reducing the need for memory, power and bandwidth.

Consider that in the United States, a leading wireless carrier—Verizon Wireless—will be opening up its closed network to any device, and any application, in early 2008.

As mobile devices become more powerful, their software stacks edge ever close to desktop and notebook PCs. As WiFi becomes more ubiquitous, and as other wireless networks lower their proprietary barriers, they become more like LANs—good news for consumers and business users.

Even better, it's great news for enterprise software developers and Web site creators. Today, it's an expensive extra step to create mobile-friendly applications, and all too often, the cost is prohibitive. Soon, it should be totally unnecessary to make special mobile applications. We can't wait. ■

Business Intelligence
In the Age of SOA

History shows that wherever there are software applications, business intelligence follows. It used to be possible to link BI to a database or data warehouse in order to analyze company performance. Companies would, and still do, try to shuttle increasing volumes of information into data warehouses, and then extract it for analysis.

Getting data into and out of the data warehouse turned into a complicated chore in its own right, but in the past few years it's become overwhelming as applications have proliferated and become more sophisticated. Most businesses recognize that they need to analyze this information if the best decisions are to be made, but they are still applying retrospective BI technologies and approaches to the problem.

The most elemental challenge to traditional BI is the requirement to analyze data as part of a business process, not simply to report on it after the fact. In order to build BI into processes, BI needs to be real-time. This represents a seismic shift for an industry that runs on batch updates.

The old architectural approach to BI—adding it after applications have been built and focusing it on the database or data warehouse—doesn't make sense in an event-driven world. At the same time, those events, in a service-oriented architecture (SOA), represent an unprecedented opportunity for analysis and action.

FASTER ISN'T FAST ENOUGH

The new approach to BI is enabled by the flow of data through applications and middleware. This means that companies building a SOA can benefit from determining now how BI can help them get the most out of their investment. Indeed, companies have to add BI to SOA—it simply becomes a question of how and when they'll do it.

The traditional route to BI is database-centric and focuses on giving companies dashboards for looking at information once it's made its way into the data warehouse. But data warehouses are out of date. Extracting, transforming and analyzing information that's even hours old doesn't tell the company what to do right now.

It's not that the data warehouse no longer matters in a SOA; it does. But it should be understood for what it is—the system that affords a look at past performance. So if companies are looking to the data warehouse to provide actionable information, they've made an elemental mistake.

To gain insight, and to achieve the benefits SOA promises, businesses need to view BI differently. There are a few approaches that generally get considered.

The first is BI as a Web service. Some analysts have described the traditional

Charles Nicholls



BI vendors as "sleepwalking into SOA," and the vendors have reacted by providing Web services interfaces. The problem is that the data is usually coming from a data warehouse and therefore is old. It also doesn't contain process state data, so using BI as a service is useful only for historical data lookup tasks. Companies can wire

BI tools to operational systems, but this introduces a performance impact.

Next is data as a service. Several middleware vendors position their distributed query platforms as "data as a service." Here the concept is to offer one interface that will provide a heterogeneous join on data retrieved from databases. Most of these systems have a cache built in so that repetitive data lookups are faster. This can work well for slowly changing dimensions, but as soon as significant volumes of data are involved, performance suffers.

Finally, there's event intelligence. This approach doesn't rely on queries and therefore has no impact on operational data sources. Rather, an event intelligence approach uses events flowing through the SOA infrastructure or published by BPM tools as its data source. Architecturally different from traditional, query-based BI, event intelligence maintains continuous calculations in real time, enabling complex calculations to be built into business processes.

Considering these approaches is useful when weighing SOA implementations. The more fundamental question is: When should companies consider the different approaches? In most SOA approaches, BI is still an afterthought, but this is changing rapidly.

INTELLIGENCE FROM THE GROUND UP

Industry research firm Ovum suggests that approaches to SOA today fall into three categories.

First is the clean slate, in which an organization with no legacy code can design a SOA from scratch. Also in this category are organizations that take a strategic approach and evaluate their demands for information before they consider the technology involved.

The second approach happens when companies view SOA as a development pattern and implement it in a technical

manner. Almost invariably, the business doesn't understand what SOA is and conversations about the types of intelligence users across the business need to receive haven't happened.

There's also a middle-ground approach to SOA, in which a line-of-business sponsor works with IT to solve a defined problem and includes BI to analyze certain anticipated questions. SOA at the departmental level can be useful in some cases, although it doesn't address dynamics that push people to work cross-functionally.

According to Aberdeen Research, the biggest challenge in corporate IT is imparting real-time visibility into business operations. Indeed, gaining that insight is one of the major justifications used for most SOA projects. Software professionals must recognize, though, that simply building a SOA will not make processes more intelligent. Unless event intelligence is built in, the new architecture will simply automate dumb processes.

FOCUS ON MIDDLEWARE

The most elegant approach to adding event-driven BI to a SOA environment is to integrate it from the outset. The trend toward middleware-oriented development paves the way by promoting the construction of loosely coupled services that deliver flexible applications. Now, rather than reporting on processes after they occur, BI integrated can support decisions in real time. The new BI applications do this by working with the services that help create the SOA.

Once the SOA has been built, however, bolting BI on after the fact in a loosely coupled environment becomes an architectural mess. In effect, IT must reintegrate services that had been loosely coupled.

EVENT INTELLIGENCE

The answer is to build in event intelligence from the outset of the SOA project. In this way, the business keeps the flexibility of the SOA and allows applications to be altered or added as business needs change—all while gaining access to the data needed to power smarter decisions.

The ability to make real-time decisions opens up new ways of doing business and interacting with customers. The first step to getting there is to talk with business users and ask what they want to measure, and then to use the new generation of BI tools to deliver that information.

Does this mean throw out the data warehouse? Certainly not—it remains the system of record. But it does mean that with SOA, you're going to be able to use BI in an entirely new way. ■

Charles Nicholls is founder and CEO of SeeWhy Software, which sells business intelligence software.

LETTERS TO THE EDITOR

Rebutting a Mischaracterization

The Special Report "Ch-Ch-Changes" [Nov. 1, page 43] requires a response. It describes Perforce's software configuration management (SCM) system as one of the "simpler, less costly branch-and-merge tools...for small-team projects." This characterization of Perforce's technology is entirely incorrect.

Early on, smaller development shops adopted Perforce for its ease of use, simple installation and comparatively low price, but as these small shops have grown, so have we. Keeping Perforce's performance and scalability at least one step ahead of our largest customers' needs has been one of our greatest successes.

In fact, Salesforce.com, whose senior release manager offered the lead quote in the article, is among the more than 4,500 organizations worldwide using Perforce to manage their source code and digital assets. Today, some of our larger customers have more than 8,000 developers and store several terabytes of data in Perforce. SAP, National Instruments, Qualcomm, Washington Mutual and Electronic Arts are among our large installations.

Over the last 10 years, we've ensured that our technical solution has scaled with the needs of our large enterprise customers. Your article is inaccurate in this respect.

Nigel Chanter
Chief Operating Officer
Perforce Software

FREE SOFTWARE

I've just read David Rubinstein's column "Free as in Constrained" [Nov. 15, page 54].

Mr. Rubinstein, we are in 2007: An editor-in-chief of any software developer magazine must surely know about soft-

ware licenses. The ending of this opinion article is a blatant attempt to misguide and plant Fear, Uncertainty and Doubt (FUD) over the use of "free software"/"open software" by the readers. Not even in Redmond Magazine would this FUD be tried.

"Free software" is the definition given to code published under certain licenses. Those licenses provide rights and also provide restrictions on their use. Those restrictions are there so the code could be free before *and* after being used.

Without those restrictions, the code would lose its freedom.

Think of those restrictions as limits established by law. We, as free men and women, have rights. And we are also restricted by laws and their limits. Are we really not free because we cannot do anything that we want to? Are we really not free because we have to abide by the existing laws?

It's the same thing with "free software," which is not really a clear term in the English language, as "free" can be either "free as in freedom" or "free as in no cost." They're different.

That's why I prefer to use the term "open source." This term shows that the "source" (code) is available under an "open" license. And, as any license, it has do's and don'ts.

Josep L. Guallar-Esteve
Member of IEEE – Computer.org

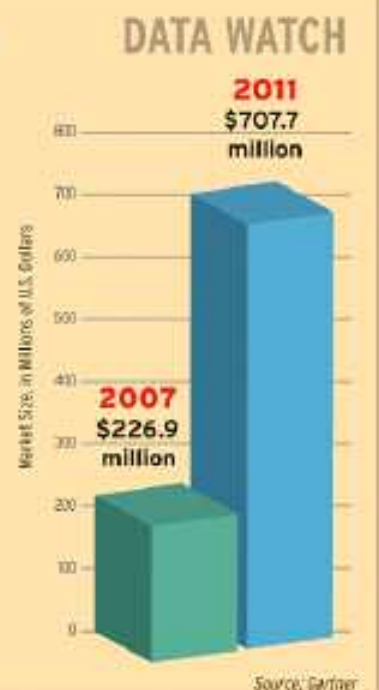
CLARIFICATION

Green Hills Software customers can still purchase Express Logic's ThreadX real-time operating system under the terms of a reseller agreement that will not expire until Dec. 10, 2008. An article in the Oct. 15 edition of SD Times failed to state this option for Green Hills customers.

Social Software's Role In Business to Boom

Is social networking going to be the next big thing in enterprise collaboration, or is it already there? That's the question posed by new figures from Gartner, whose analysts believe that the demand for better sharing of data along business functions is driving the growth of collaboration technologies. The firm believes that the market for enterprise social software will almost triple between now and 2011.

Gartner research director Nikos Drakos spoke last month at the Gartner Symposium/ITxpo in Cannes, France, explaining that "collaboration can be supported in new ways" and that companies "need to assess the social culture in the workplace and use social software" to embrace a wide community.



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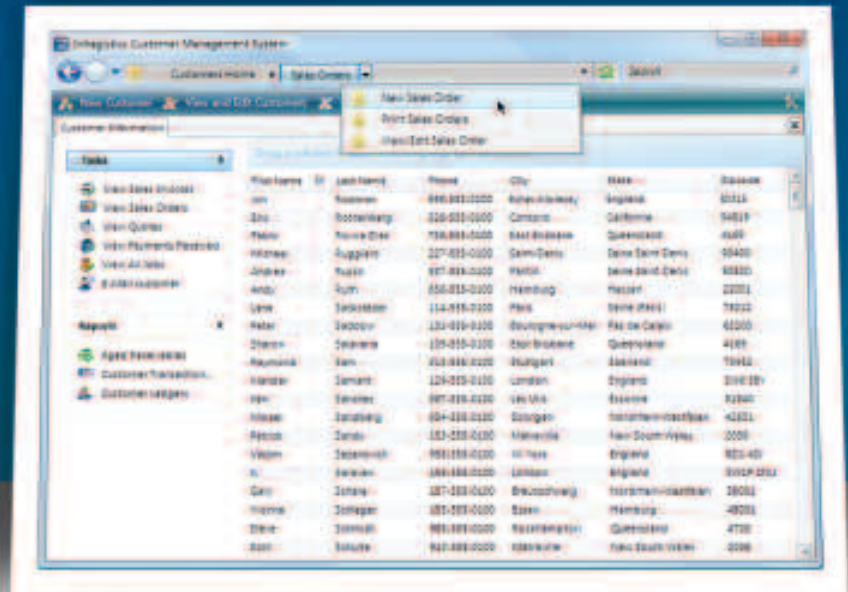
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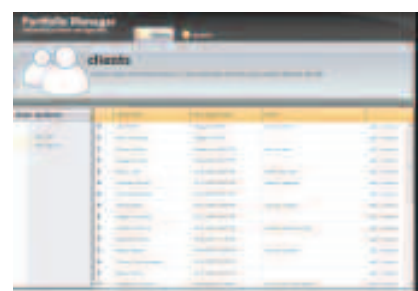
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Larry in Real Life

Dear Newspaper Advice Lady: You know those cartoons of the frustrated worker? Red cheeks, check valves for his pupils, popped-out collar stays and steam coming out of his ears? That's me. I can't ask anyone else for advice—only you can help me. You see, I am a bit of an advice-giver myself: I write a column for a software development newspaper. Nothing fancy, just a few hundred words on trends, practices that have proven to be worthy, and probably more references to Prolog than are strictly necessary. Now, though, the only thing that I can think to write is "Software cannot be developed without testing!" and then cutting and pasting 100 times. And you know how editors are about "stunt" columns.

Let me give you some background. I engaged with a small company about rapidly developing some features for clients unhappy about the overall speed of system development. Pretty typical stuff: Pick some low-dangling fruit that's never been given high priority, get some easy "wins" to take the pressure off.

What was supposed to be a simple automation task turned out to require not only supervision but also a large amount of "manual overrides" of this and that parameter. Who gave the client the impression that the system had "manual

overrides"? Me. When I was developing it, and a funky input value created an erroneous output, I said, "I can manually override that," and then inserted a "magic number" into my code. I'm so ashamed! But it gets even worse, as the next month's run showed funky values to be a regular occurrence, which, of course, I should have known since funky values are like cockroaches: If you see one, you've got a hundred.

Rather than step back and evaluate the dramatically changed context, I plowed forward. I began working with "Bob," a Web programmer charged with creating the supervisory UI.

I use the word "programmer" provisionally. I've never worked with someone as anti-productive. I think he's a refugee from the "Dilbert" mirror universe, in which he's a pointy-haired programmer, a perversion of all I hold dear. The only time he's used version control (only time, I swear) was when he gave up working on a buggy Web page, and I said to give it to me to fix—he checked in the buggy version. And when I say buggy Web page, I'm not talking about a CSS problem. (Not that Bob uses

CSS. Once he gets an effect he likes, he just cuts and pastes that `<div>` until he's done). The bug related to the way the Web page looped over its database access. Bob uses ColdFusion, a system that can be very productive and professional, but in the hands of a perverse pointy-haired programmer can create unimaginably nasty code hairballs.

Yesterday morning, the on-site client said that while a certain page allowed her to override funky values, she couldn't add a value when the funk was NULL. I glanced at the page and saw the "Add value" was inside a `<:loop>` that was iterating over yet more database access (SQL Injection? Bob's never heard of it). I asked Bob to move the button outside the loop and began a daylong coding session trying to reverse-funk the inputs.

Before finishing, I asked him what the status of the fix was (he ignores the task-management software). He said he'd uploaded it to the test server. "But did you test it?" I asked. "Works fine," he assured me, before admitting that it hadn't appeared on the actual test site because of

a caching issue. When I voiced my doubts, he insisted, and I actually called the sysadmin at home to reboot the system.

As you will guess, when I checked this morning, the Web page was still broken and when I checked the file itself, I could see it was the original. After a 20-minute "conversation" of increasing volume, Bob said, "Oh, I see! You were looking at /TestSite. I uploaded it to a brand-new /TestSiteNew." When I shared my view of that decision, he said, "Control your temper, man."

Here's my question: Should I walk away? The youngish manager (my client) is a good guy, he's got the right tools in place, and he's got some good developers. But like many small shops, they don't have whip-crack discipline and are for whatever reason willing to tolerate Bob's antics. I contributed to the quagmire with flawed task selection and, even more important, bulling forward when the task changed its nature. What should I do? Walk or try to be a change agent?

Signed,

KonaKoder

P.S. Bob "fixed" the problem not by moving the button outside the loop, but by deleting the loop. Is he just jerking my chain? ■

Larry O'Brien is a technology consultant, analyst and writer. Read his blog at www.knowing.net.

Windows & .NET Watch



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When BPM, SOA Are DOA

At the SOA Executive Forum this year, I led a panel titled "Bridging the Gap Between BPM and SOA." Of course, the normal debate took place: Where is the fit? When is the fit? What is the fit? And why do we need this? Truth be told, while many see the fit with SOA and BPM, as I do at times, there are times when it's not a fit, and users need to be aware of that fact.

Let's first consider the notion behind SOA. We externalize services and build new services to provide the opportunity for a solution, but it's not a solution unto itself. From there we move up into the solution layer of the SOA, or into places where the services are assembled into a solution. What's cool about this layer is that it provides the agility concept for SOA. In essence we're able to put volatility into this domain and configure and reconfigure solutions using and reusing existing services. That's SOA.

So, the debate is around what's at that solutions layer. Indeed, you can put in one or all of the following: a SOBA (service-oriented business application), workflow or business process management. While opinions vary, I would include orchestration, choreography and proprietary business process management within the notion of business

process management. So, who's right?

There is no one right answer. Indeed, SOA is all about architecture, which is all about options. Thus, the way in which you assemble your services into a solution is going to be domain-dependent. However, it's important to understand the core patterns.

Those who need to externalize services to humans may find that SOBA is a much better approach to service composition than process-based technology. In fact, most process-based technology, even workflow, does a lousy job at interacting with humans. So, you pick AJAX development tools, Java development tools and an application server, or something that's able to bind many back-end services into an application with a traditional user interface. While some don't think this replaces process-based technology, in many cases I find that SOBA is the only composition technology required—thus it's the way we create the solutions.

Workflow, which seems so 1990s, is actually a valuable asset in the world of SOA. Indeed, we would use workflow instead of "traditional" process-based tech-

nology for the following requirements:

- When we have to call out to a human being to make a decision, such as approving a work order or an expense report. This is really the key reason.
- When the processing is lightweight and doesn't need heavy-duty transactions.
- When the service collections form pat-

terns and thus are more amendable to workflow.

With the workflow solution, you still have all of the advantages, such as keeping volatility in a single domain and composability of services. However, this is typically contraindicated when you need more process and fewer people.

More process-oriented solutions, such as proprietary process management solutions, orchestration and choreography, in essence, define their own approach to service composition. Again, no one answer works here.

One would look at orchestration when attempting to create a solution with a centralized composition engine, where the services are bound together to form new composite services. Indeed, orchestrations are services and have attributes of services, such as WSDL. Moreover, they are very synchronous in nature.

SOA Watch



David S. Linthicum

Choreography, on the other hand, approaches composition by defining how the services interact, or allowing the services to "leverage" each other in a style that's more asynchronous. So, the services work together to form the composition, versus orchestration where they are more bound together. Get the difference?

Or you can go the proprietary route and leverage BPM tools that don't really leverage standards and approach process integration and service composition in their own way. While the downsides are obvious, a lot of these tools have many more years of experience than the SOA tools that have recently hit the market.

So, there are many options when it comes to service compositions that don't include BPM-oriented technology, and they work just fine. However, what's most important is that you understand not only what the options are, but also how to understand your own requirements to figure out the right architecture. This includes a complete metadata-, services- and process-level understanding of your problem domain. Other things to consider are governance, performance and security.

At that point, you'll find the right solution is obvious. In some instances, it may include BPM-oriented tools, but it's not always the right solution. ■

David S. Linthicum is a managing partner at ZapThink. Reach him at david@zapthink.com.



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Free as in IDE

In my previous column, I discussed the latest release of IntelliJ IDEA from JetBrains, which I consider to be the best Java IDE available, and well worth the price despite the availability of very fine competing open source IDEs. I now will explore two free alternatives: the unheralded JDeveloper from Oracle in this column, and the new major release of NetBeans from Sun in my next.

To grok JDeveloper (free at www.oracle.com/technology/products/jdev/), it helps to know its history. It was originally a paid product, costing nearly US\$1,000. In those days, it was a derivative of Borland JBuilder. Eventually, Oracle rewrote JDeveloper internally to pursue its desire for greater integration with enterprise technologies. Originally, Oracle fumbled this process by making JDeveloper primarily an Oracle-oriented product. But later releases showed integration with many databases and most app servers. What impressed me most at that time with JDeveloper was the ease of navigation. It lacked Eclipse's cumbersome, heavy feel.

It also provided features no other IDE considered. For example, JDeveloper embedded a scaled-down Java EE container in the IDE (it's based on the OC4J app server that Oracle acquired years ago from Orion). This feature

enables you to develop Java EE projects and test them locally from within the IDE with a single mouse click. Sweet.

Three years ago, Oracle began giving away JDeveloper (although it's still closed source). And in the process, the company shifted gears: Rather than actively promote and develop the product, it was retargeted as being Oracle's principal internal Java IDE. If you wanted a copy of it, you could certainly get it, but the company was no longer in the hunt to add ever more elaborate and unnecessary features.

For example, JDeveloper does not support C++ coding as Eclipse and NetBeans do. Oracle's de-emphasis of JDeveloper continued in other areas; developer tools were now folded into the middleware products.

Middleware? Yup, that's where they were demo'd at Oracle Open World this year in San Francisco and where they are on the Web site. JDeveloper was also tied to Oracle's DBMS product version numbers. Because the numbers have to be in sync with the flagship database product, the last major release of JDeveloper was numbered 10.1.3.2, meaning there's no way for users to tell from release numbers

what's a major release and what isn't. With all this devaluation going on, JDeveloper slipped off my radar 18 months ago. Recently, as the company has begun testing release candidates for JDeveloper 11, I went back to check out what's new and different. And I confess I'm very impressed.

First, the navigation and ease of use have improved. I believe JDeveloper is truly the only IDE in which a new user can set up a project for existing code and be able to compile, run and even profile the code (for performance and memory usage) without recourse to help. The only peculiarity is that JUnit has to be downloaded and installed as a plug-in (a trivial task, but one that needs a

lookup in help to figure out). The enterprise features are extensive. JDeveloper has UML diagramming tools for the most used diagrams (use case, class, sequence), plus the expected editors for XML (and XSLT, Xquery and XSQL). Database connectivity is robustly supported as well—no surprise there. JSF, one of Oracle's pet projects, is a key technology, with wizards and numerous tools. Also, there are numerous features supporting Oracle's own Java application

technology, called Oracle Application Development Framework.

Web services benefit from many tools, such as the full array of standard capabilities, plus a WSDL editor and an HTTP analyzer. Eventually, the BPEL designer from the 10.1.3.x version of JDeveloper will be added to this release, although it's not yet included in the release candidate. This version does add considerable support for AJAX, including editors and a debugger for JavaScript.

There are a few limitations that you should know about. JDeveloper's support for mobile is limited. Also, because the community is primarily internal to Oracle, the collection of plug-ins is not nearly as great as that of its competitors. But, there are plug-ins for the major SCM products (CVS and Subversion are built in, while Perforce, ClearCase and Dimensions are accessible via plug-ins), PMD, AspectJ and a few other packages.

However, for most purposes, JDeveloper has all you need, and probably more. It might well be the most user-friendly, feature-complete, free Java IDE available today. My look at NetBeans 6 in my next column will enable us to make a final determination in this regard, but for the moment JDeveloper is looking surprisingly strong. ■

Andrew Binstock is the principal analyst at Pacific Data Works. Read his blog at binstock.blogspot.com.

Integration Watch



Andrew Binstock

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Data Does the Driving

This is the time most publications wax nostalgic over the year that was, recounting the highlights and lowlights, and trying to put it all in perspective. Count us among them: SD Times will publish its traditional "Year in Review" issue Jan. 1.

So, what to write about in this, the final issue of 2007? Why, what we can expect in 2008, of course. You've got to see where you're going to know where you've been...or something like that!

Anyway, with the help of Daniel Chait, founder of software consulting company Lab49, here are some recent trends that are poised to cross the chasm, pass the tipping point and take off.

The first area that will become much more commonplace in 2008 is data streaming, otherwise known as complex event processing. CEP, which had been relegated to highly specialized applications such as financial trading, will make its way into retail and other markets that have a need to perform calculations on data and see patterns in near real time.

The financial services industry has driven CEP, because institutional, algorithm-driven trading has led to massive increases in trading volume. "The old method of store and process for data is falling by the wayside," Chait said. "Writing processes in batch jobs at the end of the day is increasingly inadequate." Financial services companies need information on activity, trading and market information throughout

the day to remain competitive.

Complex event processing came out of the world of academia, Chait noted, where the work was focused on processing data from sensors. In the area of weather prediction, sensors that can collect data on temperature, humidity and wind speed need to be read in real time to be useful.

Industry Watch



David Rubinstein

For retail, Chait said companies can analyze traffic and consumer patterns. "Using CEP engines, they can do clickstream analysis to see what's going into a shopping cart, what add-ons are being chosen, when dropouts are occurring," he said. A company might use that data analysis to decide to mark down a certain item on its Web site for a certain time period of the day to drive sluggish sales, for example.

This need to handle massive amounts of data and transactional information will give rise to wider implementation of parallel and distributed computing, Chait believes—the second trend that he sees coming into its own in 2008. "This type of massive data streaming is beyond the capabilities of the fastest computers out there," he said. "We need distributed data caching and grid computing to handle it."

The use of multicore processors is creating challenges for developers looking to take advantage of the increased computing power. "It's not simply a given that an application will run twice as fast on a dual-core machine," Chait noted. "The application has to be architect-

ed" in a way to best utilize such features as failover and provisioning.

Microsoft has come out with utilities around parallel computing, Chait pointed out, to enable developers to write applications in the way they're most comfortable and have the machines do the parallelization of the applications.

So, with increasingly large numbers of events occurring in these systems, and multicore processors being created to handle the burgeoning load, what must follow is a way to make sense of all the data being pumped out of these systems. That, according to Chait, will lead to a growth in the data visualization market in 2008.

"Developers need to think about new ways of conceptualizing and presenting these massive amounts of real-time data in a way people can grasp and make sense out of, and have it delivered over the Web on a browser," Chait said.

Web applications will continue to look and act more and more like client/server applications, with all the interactivity, charts, animations and multiple windows.

He believes Microsoft, with its Windows Presentation Foundation technology for next-generation graphics display, will have the greatest impact because of the company's reach, and added that Adobe, with its Flex technology, will continue to make inroads and gain market share.

Look for such things as 3D graphics and transparency to have greater uptake in the year ahead, Chait added.

But before then, we'll take a look at how we got here with a review of 2007. Happy holidays, everyone, and we'll see you back here next issue—and next year. ■

David Rubinstein is editor-in-chief of SD Times.

BUSINESS BRIEFS

Microsoft has completed construction on new headquarters for its research division, the first of seven new buildings planned for the company's West Campus construction project, in Redmond. In 2006, the company announced it would expand its Puget Sound area holdings by 3.1 million square feet; that has now grown to 5.5 million square feet. The West Campus project, due to be completed in April 2009, will house an expanded Entertainment and Devices division, as well as a post office, bookstore and 12 food outlets. "Continuing to build a world-class campus in Redmond is critical to a company like Microsoft that has innovative people as its greatest asset," said Microsoft CFO Chris Liddell in a statement.

... Intellectual property protection software company **Macrovision** has signed a definitive agreement to acquire specific technology assets from **Cryptography Research**, including Self-Protecting Digital Content technology, upon which is built BD+—adopted by the Blu-ray Disc Association as another layer of content protection for movies. An important feature of BD+ is that it can respond to security threats, which previous DVD security technologies could not do. The acquisition will cost Macrovision approximately US\$45 million in cash plus warrants for Macrovision stock.

EARNINGS: **BEA Systems** announced an 11 percent increase in quarter-over-quarter revenues and a 59 percent gain in GAAP net income for its 2007 third fiscal quarter ended Oct. 31. For the period, revenues were US\$384.4 million, compared with \$347.6 million

for the same period in 2006. The company, which in October rejected a purchase offer from Oracle, posted GAAP net income of \$56 million, or 13 cents per share, up from \$35.1 million, or 8 cents per share, a year ago. "Our third quarter results demonstrate continuation of the business momentum we built in the second quarter. In spite of significant distractions during the quarter, the team did an outstanding job executing to our revenue plan and generating a strong pipeline of business," said Alfred Chuang, BEA's CEO, in a statement. In its filing, BEA noted that its AquaLogic products, for business-driven SOA, accounted for 27 percent of the company's license revenue. ... **Salesforce.com** announced record revenue of US\$192.8 million for its 2007 third fiscal quarter ended Oct. 31. The company has raised its outlook, now expecting to pass \$1 billion in revenue in fiscal 2009, according to its financial statement for the quarter. GAAP net income was \$65 million, or 5 cents per share. ... **Hewlett-Packard** reported fiscal 2007 net revenue of US\$104.3 billion while its board of directors approved an \$8 billion share repurchase program. HP chairman and CEO Mark Hurd cited sharp improvement in the company's software segment as one of the reasons for strong fourth-quarter performance; the company took in \$3.7 billion in revenue for the period. Hurd said HP added \$12 billion in new revenue this year; however, the company's SEC filing did not break out how much of that is attributable to the **Mercury Interactive** acquisition. For the year, non-GAAP operating profit was \$9.6 billion, or \$2.93 per share. ■

EVENTS CALENDAR

Macworld Conference & Expo San Francisco IDG WORLD EXPO www.macworldexpo.com	Jan. 14-18
Southern California Linux Expo Los Angeles SCALE INC. www.socallinuxexpo.org	Feb. 8-10
Game Developers Conference San Francisco CMP MEDIA www.gdconf.com	Feb. 18-22
FutureTest 2008 New York BZ MEDIA www.futuretest.net	Feb. 26-27
Emerging Technology Conference San Diego O'REILLY MEDIA conferences.oreillynet.com/etech	March 3-6
MIX 2008 Las Vegas MICROSOFT www.visitmix.com/2008	March 5-7
BrainShare Salt Lake City NOVELL www.novell.com/brainshare	March 16-21
EclipseCon 2008 Santa Clara ECLIPSE FOUNDATION www.eclipsecon.org/2008	March 17-20
Secure Development World Alexandria, Va. SDW www.securedevelopmentworld.com	March 25-26
SLAM (Sales, Licensing, Alliances & Marketing) Burlingame, Calif. SOFTWARE BUSINESS www.slamconference.com	April 3-4
Developer Relations Conference Redwood City, Calif. EVANS DATA www.evansdata.com/drc	April 7-8
RSA Conference San Francisco RSA www.rsaconference.com/2008/US	April 7-11
MySQL Conference & Expo Santa Clara MYSQL en.oreilly.com/mysql2008	April 14-17
Embedded Systems Conference San Jose CMP MEDIA www.embedded.com/esc/sv	April 14-18
Software Test & Performance Conference San Mateo, Calif. BZ MEDIA www.stpcon.com	April 15-17

For a more complete calendar of U.S. software development events, see www.bzmedia.com/calendar. Information is subject to change. Send news about upcoming events to events@bzmedia.com.

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